

elled by the United States District Attorney of the Circuit Court of Western Pennsylvania, consisting of Hon. S. A. McCandless, President; George Dilworth, Col. S. M. Jackson, Major Wm. McConway, Wm. Metcalf, J. G. Thompson and Chas. E. Andrews. This Commission is now in session reviewing the evidence as to the value of these improvements and franchises, and a large amount of valuable detail has been submitted by the company's officers and by its Chief Engineer, Col. Thos. P. Roberts, to the effect that in consequence of the repairs and betterments which have been made to maintain the navigation the structures are in better condition and less liable to destruction than during the earlier years of their existence. They have been submerged sometimes as much as 30 ft., and have successfully withstood the floods without interrupting navigation for the past 16 years, showing a very substantial condition.

There are seven dams forming pools varying in length from five to nineteen miles and in left from 82 to 12.6 ft.; the total fall in the 88 miles of river which they cover is about 75 ft. At the first four dams there are double (parallel) locks, all large enough to pass the coal boats and steamers. The largest lock chamber is 313.5 ft. long by 56 ft. wide—the former regulation size of the

of extraordinary repairs or enlargements of plant, as indicated.

Thus by balancing the ordinates above and below the assumed "financial gradient" the true position of that line is determined and the increment is fixed for the entire period of 57 years at \$5,200 per annum. Had the averages of gross receipts and expenses been taken the difference would have been a constant for all future time, showing no increase of revenue. Hence the advantage of this simple graphical method. If this annual increment be capitalized at 4 per cent. it will represent \$131,500 as the increase in the value of the franchise each year and thus form the best possible basis for reaching an equitable result. Deducting the fixed charges for the past 16 years, \$90,993, from the gross revenue as given by the *gradient* for 1896 and capitalizing at 4 per cent. makes the present value of the franchise \$5,230,925. It will be seen, however, that when a corporation has no net receipts this method suggested by the court would make its value nil and hence this basis of appraisal has its weak element and recourse must also be had to the value of the plant itself in its existing condition for service as an auxiliary. This as an asset has been estimated to be worth \$2,500,000.

For example, it would not be claimed for a moment

to utilize a large portion of the water now wasted in running compressors, storing the air at the dam and selling it for power purposes.

On the above basis the value of these improvements and franchises would aggregate nearly ten millions of dollars, and they serve to illustrate a method of securing an economical, rapid and continuous improvement of our tributary waterways, which has been of inestimable value to the general government in stimulating industries and commerce, and increasing its revenues without having cost it one dollar for either construction or operation during the long period of the life of the company—for all of which it would seem as measured by expenditures on other streams* for commercial purposes that the government would be amply justified in paying the above amount at least as a partial equivalent for benefits conferred.

In fact, the writer believes that there are no investments made by the government that are so generally beneficial or produce greater returns, both direct and indirect, than those looking to the emancipation of her waterways from all obstructions, whether they be *tolls* or *shoals*.

Massachusetts Railroad Commissioners' Report.

The Railroad Commissioners of Massachusetts, John E. Sanford, George W. Bishop and Henry B. Goodwin, have issued the twenty-eighth annual report of the Board. The length of railroad in the state is practically the same as last year, 2,113 miles. The length of second track is 859 miles, of third track 30 miles and fourth track 18 miles. In the review of the operations of the year a brief retrospect is given as far back as 1871. Since 1880 the companies operating in the state have increased their mileage only 30 per cent., but the investment has increased 94 per cent., showing an expansion of business which might be overlooked by one considering the mileage by itself. The volume of traffic has nearly trebled, but the revenue has increased only 122 per cent. The report says:

There are clearly no symptoms of decay or retrogression in the railroad system of the state. In the enlargement of the facilities for transportation, in the provision of more ample terminal accommodations, in the elimination of grade crossings, in all that tends to increase the capacity of the roads for the handling of merchandise and the expedition and safety of travel, there were never, perhaps, more conspicuous enterprise and courage, or a more abundant expenditure, than at the present time. The roads were certainly never rendering on the whole a larger service to the public, in a more liberal spirit, or on more favorable terms.

Twenty-five years ago, in 1871, the average rate of interest which the railroad companies of this state were paying on their funded debts was 6.42 per cent. They are now paying an average rate of 4.77 per cent. This decrease (1.65) of a little more than one-quarter in the interest rate makes the annual interest charge on the \$132,202,380 of railroad bonds now outstanding less by \$2,181,339. If other conditions had remained the same, this saving in interest might now be applied to increase the dividends on capital stock; and the average dividend rate the last year would in that case have been 1.07 per cent. higher, or 6.56 instead of 5.49 per cent., which would still have been lower than in 1871, when it appears to have been 7.47 per cent. Other conditions, however, have not remained the same. In this same period of 25 years, the average passenger fare per mile has been reduced from 2.51 to 1.79 cents, and the average freight rate per ton-mile from 3.11 to 1.28 cents—a reduction of 29 per cent. in the one case and of 59 per cent. in the other. If the rates of fare and freight which were charged in 1871 had been the current rates in 1896, the gross earnings of the Massachusetts companies from their actual passenger and freight traffic would have been the last year \$65,445,041 larger than they were; and, assuming the same current ratio of operating expense, their net earnings would have been \$19,685,868 larger—that is to say, in both cases approximately doubled.

The relief which the companies have obtained from the lower rate of interest on their bonds is, therefore, heavily overbalanced by the reductions which have been made—and, from whatever motive, without legal compulsion—in the rates of transportation.

The report contains a comparison, embracing the whole of the traffic of the roads reporting (much of it outside of Massachusetts), showing that the depression beginning in the summer of 1893 has been so far recovered from that the business of the year now reported substantially equals, and in freight ton-mileage exceeds, that of the year immediately preceding the panic.

COMPARATIVE TRAFFIC AND REVENUE, 1893 AND 1896.

	1896.	1893	Inc. or Dec. P. c.
Passengers carried.....	111,629,051	121,807,945	D. 8.36
Passenger mileage.....	1,773,733,208	1,793,588,541	D. 1.11
Passenger revenue.....	\$36,395,024	\$36,632,444	D. .70
Tons of freight carried....	34,605,838	35,318,640	D. 2.02
Freight ton-mileage.....	2,878,369,321	2,529,251,452	I. 13.80
Freight revenue.....	\$37,885,072	\$35,753,771	I. 5.96
Gross earnings.....	74,885,480	73,413,900	I. 2.01
Operating expenses.....	53,362,382	51,285,776	I. 4.16
Net earnings.....	22,523,098	22,128,124	I. 1.79
Total income.....	82,243,421	78,901,882	I. 4.23

The legislature when appealed to last year to order bicycles carried free referred the matter to the Railroad Commissioners for investigation, and six pages of this report are given to a careful discussion of the whole question. Happily, however, the representative of the League of American Wheelmen and the representative of the railroads came to an agreement after the investigation was begun, and the board now holds that no legislation is needed. The railroads made a material reduction in their rates, making the charge for a bicycle only 10 cents for all distances up to about 30 or 35 miles, and the wheelmen said they were satisfied.

The commission also reports at length on the ventila-

* On the Great Kanawha the expenditures have been \$3.19 per ton of traffic developed. At this rate, for the 5,500,000 tons on the Monongahela developed by the Navigation Company, its franchisees and works would be worth \$19,195,000.

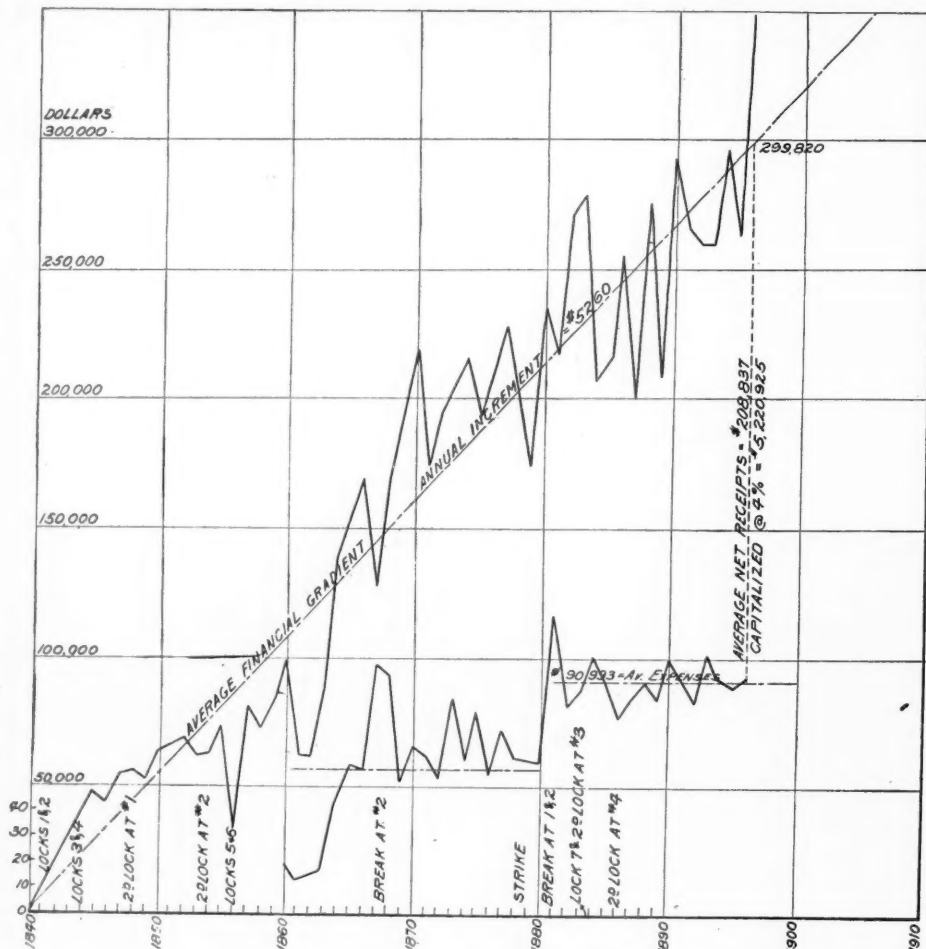


Diagram Showing the Value of the Monongahela Navigation Company's Improvements.

Computed by LEWIS M. HAUPT, Consulting Engineer.

older ones being 190 x 50 ft. The aggregate value of these works, including all the plant, is estimated at not less than \$2,500,000 in round numbers.

To determine the value of the franchises is a question about which there seems to be considerable difference of opinion, but the U. S. Supreme Court has said that "the true basis of value is the 'productiveness' of the property, and the prospective value is, of course, an element which should enter largely into the consideration of this question."

Certain prominent members of the Pittsburgh Chamber of Commerce also share this view, and state it as their joint opinion that "the fairest and most equitable basis of such valuation is found in the actual earning capacity of the company during an extended period."

They proceed to figure on the last five years, taking the net earnings and capitalizing the average at 5 per cent., thus making the value of the "company's property and franchise" \$3,634,730.

On the other hand, there are others who advocate taking the current market price of the company's securities as a basis. But this is so manifestly open to disturbing outside influences as to be unworthy of consideration.

Moreover, a valuation based upon averages for a limited period is also open to objection, as it will be seen at once that with a rapidly growing tonnage and relatively fixed expense for operation and repairs, the net revenue is not a constant, but must increase in an arithmetical progression. It was to determine the annual increment in receipts as well as to find the general average cost of maintenance (which should be a constant for a fixed plant) that the writer has made the subjoined diagram, showing graphically the gross receipts in the upper curve, the total expense in the lower curve and the dates

that the transcontinental or other railroads which are not earning dividends are of no value and in case of their condemnation by the government the compensation should be limited to their "productiveness" as dividend earners—for it is well established that such facilities promote the general welfare to such an extent as to fully justify the outlay required for their construction. French economists report that although more than \$700,000,000 have been expended on her internal canals, which are free, they are worth to the government at least 5 per cent. on this enormous sum of money—and our own statesmen have shown that although the government has expended altogether on lake harbors and channels over \$90,000,000 the economy effected in a single year in the transportation of freights has been nearly four times this sum. It would seem proper, therefore, to distinguish between the value of the franchise and that of the works in such cases just as much as in the case of a business establishment where the plant and fixtures or goods and the "good will" or patronage are separate affairs and valued separately.

But there is still another asset due to the chartered rights of the company in the water-power of the stream, which could be utilized to its fullest extent should other sources of revenue ever fail. The area of the fourth pool is so great that it would impound sufficient water on a 1-ft. depth to supply 3,000 theoretical horse-power if drawn off for a 10-hour run, and this same volume is sufficient to supply each of the pools below in succession. This supply would furnish an available horse-power, which, at a low valuation, should be worth not less than \$2,000,000 when capitalized at 4 per cent.

With the recent improvements in and increasing demand for compressed air, it would seem to be feasible

tion of passenger cars, a similar order having been made by the legislature. It appears that this order was based on a single petition from one man, Mr. J. M. Palmer, an inventor of ventilating apparatus. Mr. Palmer, Mr. Creamer and Mr. Maynard presented their devices at the hearings held by the board. The first has been used on two Boston & Maine cars for several years, the second on 40 cars on the New York & Brooklyn Bridge and the third is in experimental use on several cars of the Fitchburg road. Mr. Palmer introduces air at the front end of the car and conducts it in channels along each side of the clear story, letting it out at intervals, as far as the middle of the car. The similar openings beyond the middle are used to exhaust foul air. Mr. Creamer conveys the fresh air along the sides of the car near the floor and designs to take the foul air out at the top. Mr. Maynard, whose device is a new one, has automatic exhaust

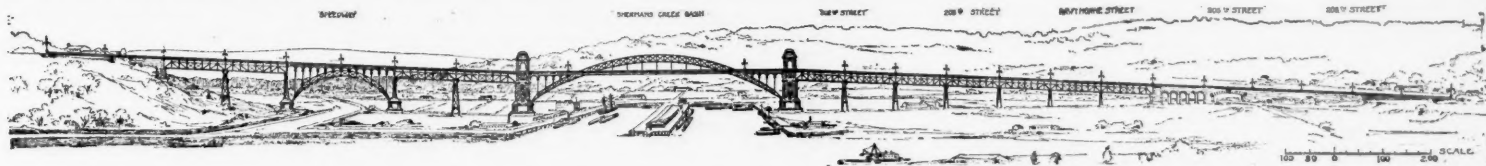
fell short of the limit named in the law, so that during the year 1897 the amount available from the state treasury, under the law of 1890, will be \$2,437,000.

A chapter is given to the Union Station on the south side of Boston; it is largely devoted to a defense of the action of the board in approving the plans in spite of the remonstrances of persons who wished to have a street laid out across the yard beneath the tracks.

The report gives the usual summaries of statistics. Part 2, of the report, dealing with street railroads, has not yet been issued.

A Proposed Viaduct from Fort George to Dyckman Meadow, New York.

For some time past, citizens in the neighborhood of Washington Heights, New York, have urged an improvement that might give a more direct means of com-



Proposed Viaduct Continuing Amsterdam Avenue from Fort George to Dyckman Meadow, New York.

ventilators opening out at the top of the car, which withdraw the foul air through registers on each side at the bottom of the car. The Commissioners do not find that any of these arrangements are sufficiently free from objection to warrant formal approval. The practical difficulties in ventilating cars, the differences be-

munication between Fort George and the lower land beyond Sherman's Creek, at the north, than is at present afforded by the Kingsbridge road. To this end plans and an estimate have been prepared by Mr. Wm. Barclay Parsons, under the direction of the property owners in the vicinity, preliminary to the introduction of a bill into the present state legislature, authorizing the city to undertake the work.

The plans contemplate the continuation of Amsterdam avenue from Fort George to Emerson street, in Dyckman Meadow, about half a mile to the north, by means of a viaduct. It has been the endeavor of the engineer to make a plan, which, while being practicable, should also be ornamental, because the structure will be a prominent object, as shown by our illustration, which represents it as seen from across the Harlem River.

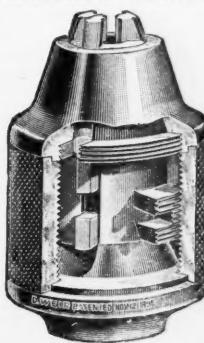
The viaduct will be of steel and masonry, and its total length will be about 2,900 ft. At the meadow end, the structure will consist of about 420 ft. of filled masonry and 200 ft. of masonry arches. On the heights there will be about 210 ft. of filled masonry.

The steel portion of the viaduct is to be about 2,040 ft. long. It will consist of two arches, one of about 515 ft. span, over Sherman Creek Basin, and another about 200 ft. long, over the new

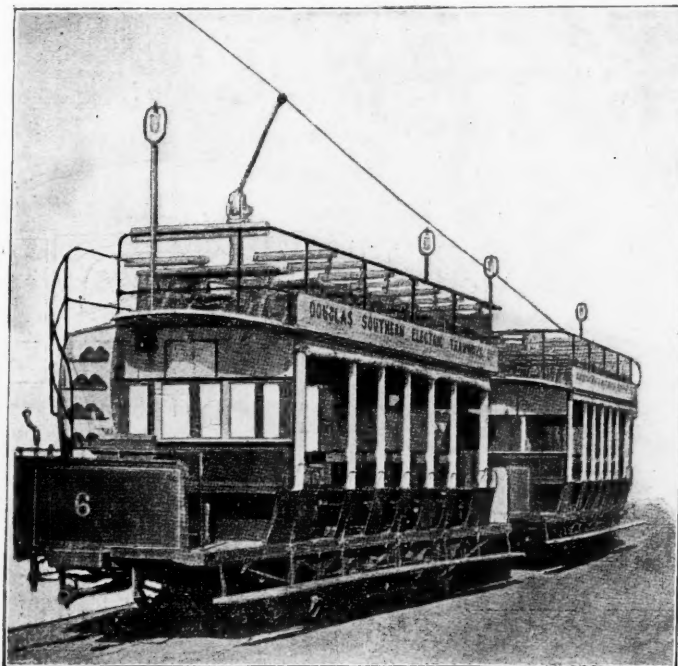
necessary to build viaducts and bridges, one of which is shown in the accompanying engraving. The road is operated only during the summer season, when many tourists visit the island. Eight cars are at present in service on the line, two of which are illustrated herewith. The power-house is located near Pigeon Stream Bridge, and the apparatus includes two Westinghouse six-pole generators of 100 K.W. capacity each. The cars are provided with two Westinghouse 25-H. P. motors with Westinghouse controllers.

A Light Drill Chuck.

The Pratt & Weir Chuck Co., Hartford, Conn., has put on the market a chuck adapted for light drilling and turning. It is made of steel, and of such grades as best suited for the different parts. The parts, all of which



are interchangeable, are machined and turned to fit. The method of construction, together with the design, make the chuck specially adapted for work where accuracy is required. The jaws, which are first hardened and then ground true, are not threaded and act independently of the sleeve. This allows a ring of greater thickness to be used, thereby adding to the strength. Instead of breaking the ring in the old way, a patented interlocking method is used, which allows the knurled sleeve to be run on or off as smoothly as if the ring were made solid. The jaws are slotted to receive the ring, leaving them free to adjust themselves without coming in direct contact with any of the threaded parts. Thus, the jaws are not thrown out of true by the threads being defaced by jamming and wear, and hence a spanner wrench is not needed to run them in or out. A powerful grip is obtained by the great length of jaws; and the device, by which they are made to act independently of the knurled sleeve, allows this sleeve to act as a check nut to hold the jaws to the work. The simplicity of design permits of great strength, and dispenses with all nuts and small screws.



Electric Cars on the Douglass Southern Tramway.

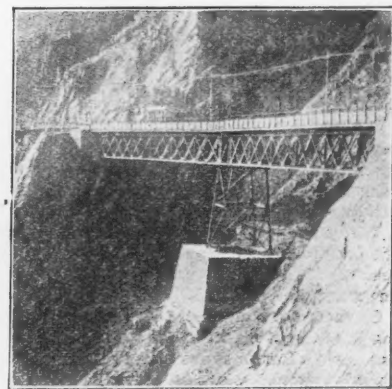
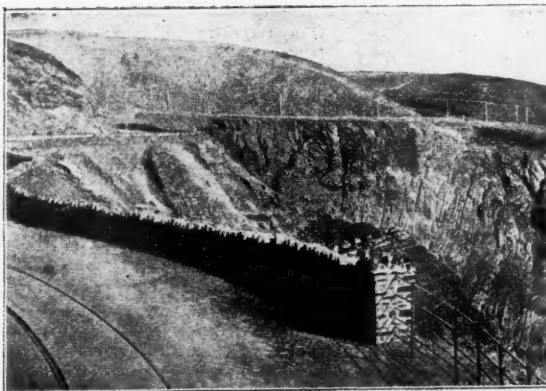
tween summer and winter conditions, and the views of the Master Car Builders' Association and of the American Public Health Association are given. While there was testimony before the board tending to show that in some cases, under favorable conditions, for the time being, these devices were better than no ventilation, the weight of evidence was not sufficient to prove that under ordinary conditions there was any marked or easily perceptible difference in favor of the cars ventilated by even the best of the patented devices. The board, therefore, reports that no specific legislation appears to be at present expedient.

Accidents to persons are reported at length, but the classification is different from that employed by other statisticians. It appears, however, that the total number of persons killed was 274 and injured 751, as compared with 248 and 733 the previous year. Only three passengers were killed by causes beyond their own control, equal to about one to 470 million passenger miles.

Professor Swain makes his usual report on the railroad bridges of the state, giving notes of the principal renewals on each road and division.

Of the 32 railroad grade crossings in the state 22 have interlocked signals. Of the 2,155 grade crossings with highways 1,154 are protected by gates, flagmen or electric signals. During the year 27 highway grade crossings were abolished, 48 were in process of abolition and petitions were pending for the abolition of 122 more. Under the act of 1890, by which the state pays one-fourth of the cost of abolishing grade crossings, \$1,313,000 has been thus far paid out by the state. In addition to this, \$850,450 has been expended under a special act of 1890 for the work on the Providence Division of the New Haven road in Boston, where the state pays 31.5 per cent. of the whole cost. It appears that during the last five years the whole amount spent in Massachusetts for eliminating grade crossings is nearly \$8,000,000. During the first four years the aggregate payments by the state

speedway, near where it turns into Dyckman street. The rest of the steel part will consist of trusses supported at intervals on steel columns. The arch which spans the basin rises from the bases of two masonry towers, and clears the water at about 85 ft. This arch is planned 5 ft. longer than the



Views on an Electric Road on the Isle of Man—Douglass Southern Tramway.

Washington Bridge arch, and leaves room for a roadway between the piers and the bulkheads of the basin at either side. The viaduct is to be 60 ft. wide, and will carry a 40-ft. roadway and two 10-ft. sidewalks. With the exception of the long arch, it will be built with a grade of about 5 per cent. The part over the basin will be level. The estimated cost of the work is \$1,400,000.

The chuck may be taken apart by first unscrewing the cone end, which has a left-hand thread, then the knurled sleeve. After this the lock ring can be taken out, when the jaws can be easily removed. For cutting and threading rod-stock, a hole the full capacity of the chuck, may be drilled through the entire center without injury.

New Eight-Wheel Passenger Locomotive—Illinois Central Railroad.

The Brooks Locomotive Works have recently built and delivered to the Illinois Central Railroad eight locomotives of the eight-wheel type for use in fast passenger service. These engines were designed by Mr. William Renshaw, Superintendent of Machinery, and embody a number of features which are departures from

It will be seen from Figs. 1, 2 and 3 that the air-pump is directly under the boiler behind the cylinder saddle. The sand-box is also under the boiler just ahead of the first driving axle. With the box thus located, sand is furnished the drivers on both sides by the operation of one valve. The Dean pneumatic sanding device is used. Two injectors are employed and are both on the right-hand side of the engine. The boiler checks are mounted

pressed out of No. 16 copper, while the base is made of a No. 17 pressed steel plate.

It will be seen that there is no deck plate, but the floor of the cab is on a level with both the running board and the floor of the tender. The auxiliary air reservoir is located underneath the floor of the cab between the frames. The frames are of hammered iron and in front of the first drivers are of the usual bar pattern. Back

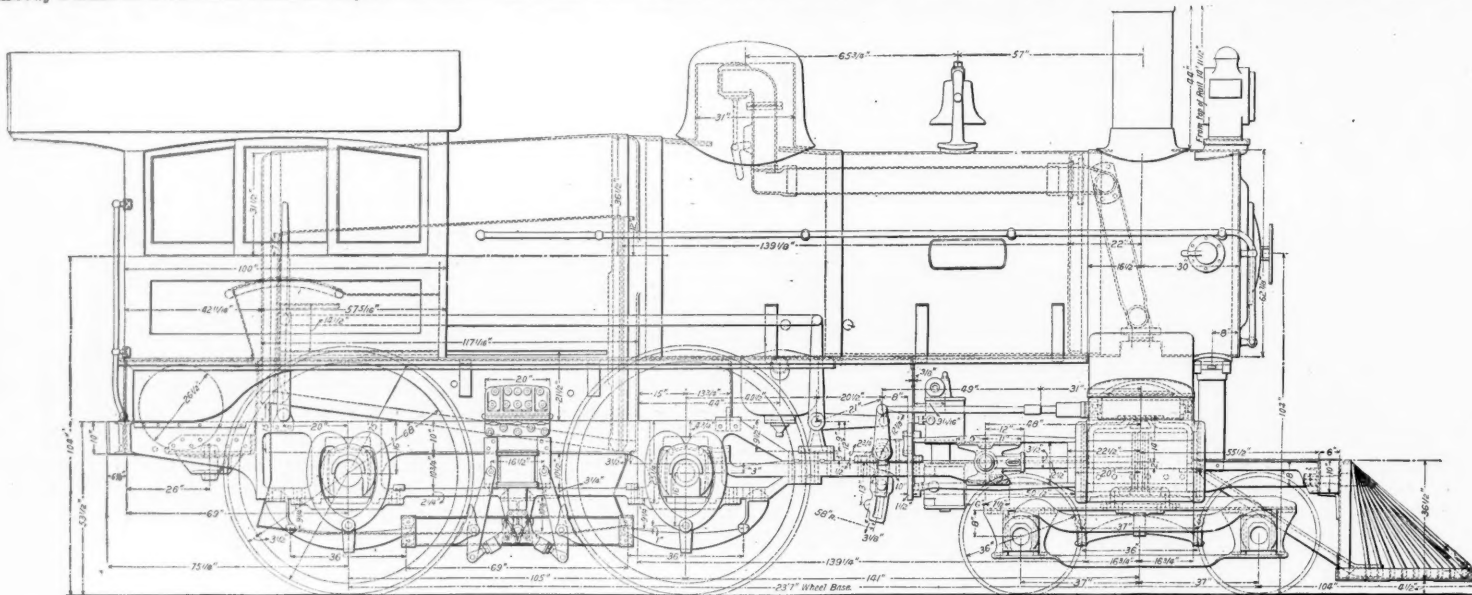


Fig. 2.

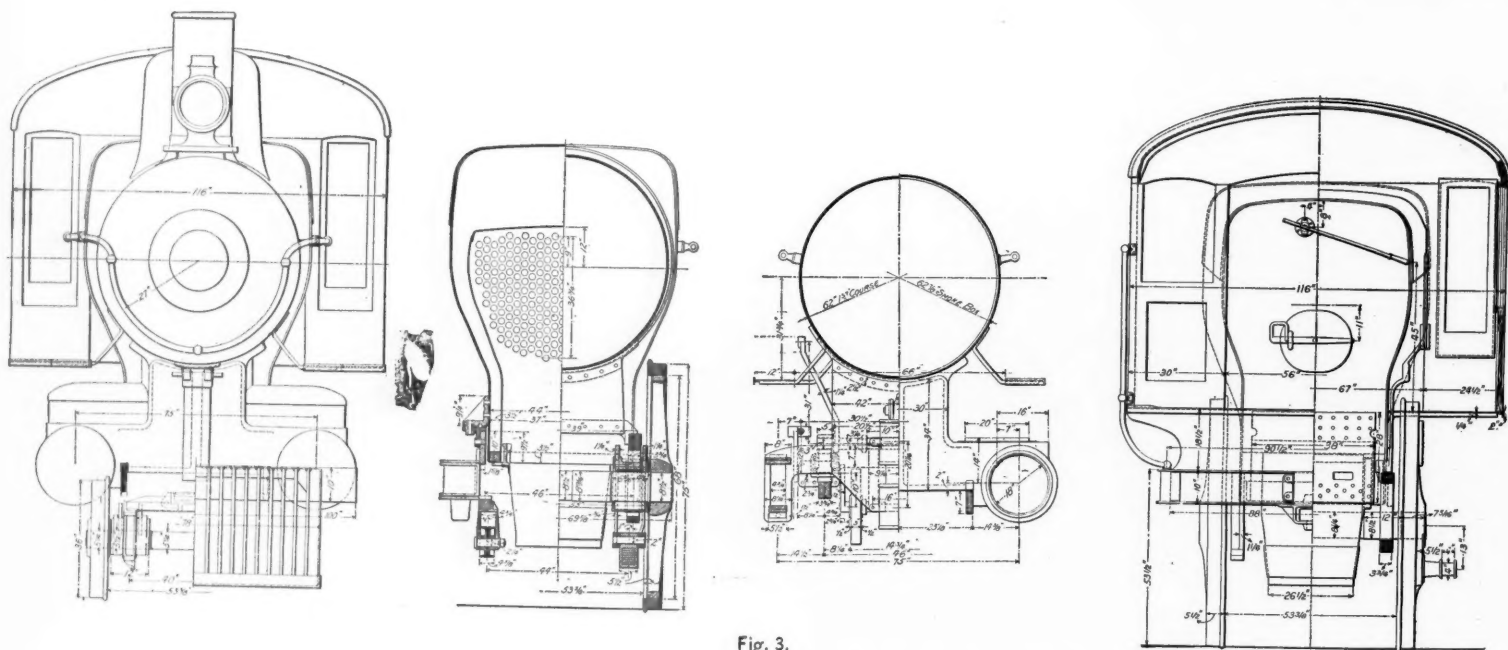


Fig. 3.

Elevations and Sections of Illinois Central Eight-Wheel Passenger Locomotive.

Mr. WILLIAM RENSHAW, Superintendent of Machinery.

Built by the BROOKS LOCOMOTIVE WORKS, Dunkirk, New York.

previous practice with American type passenger locomotives.

The builders were required to keep within certain limits of weight and still produce a locomotive capable of the maximum service. One specification of the rail-

on top of the boiler inside the cab, the feed pipe passes through the boiler and delivering the feed water at about the same point as usual. The whistle and safety valves project through the cab roof.

The boiler is of the improved Belpaire type, Player

of this point they are made of slabs 1½ in. wide by 10 in. deep, by which means from 4 to 5 in. are gained in the width of the firebox.

The cab is of wood, the standard of the Illinois Central Railroad. The tender is likewise the railroad company's

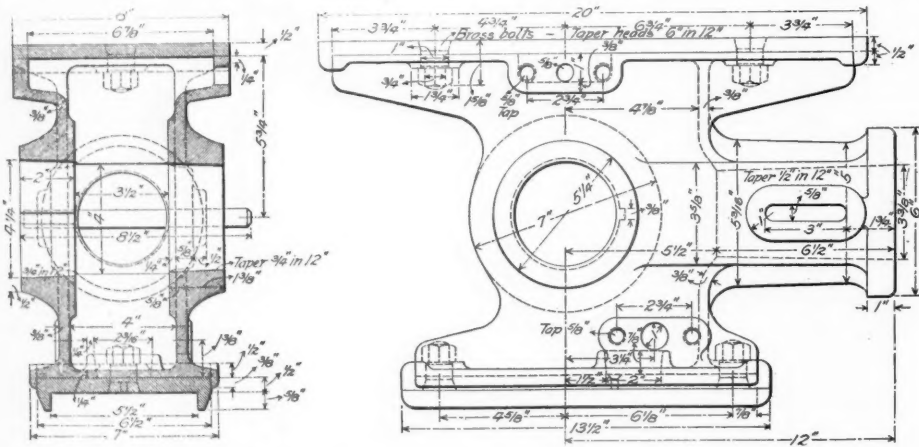


Fig. 6.—Cast-Steel Cross-Head, Illinois Central Locomotive.

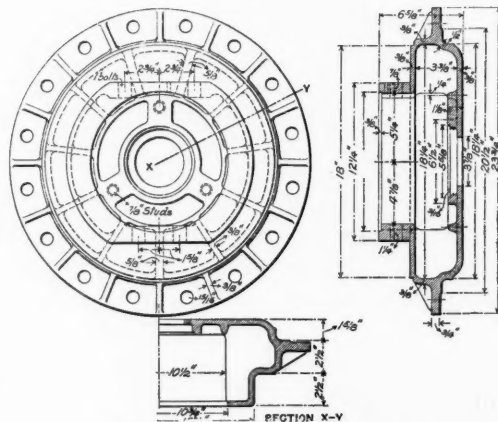


Fig. 4.—Cast-Steel Back Cylinder Head.

road company was that the locomotives should be free from unnecessary "excrescences," in the way of sand-box, piping, etc., and should present a clean, trim appearance. For this reason a number of attachments are not to be found in their accustomed places.

patent, in which the top slopes both forward and back from a point behind the steam dome. The crown-sheet has the same slope as the outer casing, so that the stay-bolts are at right angles to the sheets. The dome casing is of peculiar construction, the upper portion being

standard, with the floor in the coal space raised to that of the cab floor. The engine truck wheels are of the Paige spoke pattern and the tender truck wheels the plate pattern of the same company.

Fig. 2 shows clearly the spring hanger arrangement, a

Tender, type of back drawhead,
Cast iron with coupler and buffer pockets
" with or without water scoop.....Without
Wheel centers.....Otis Steel Co.
Tires.....Thos. Proser & Son—Krupp crucible
Axles.....Hammered iron—Brooks
Sight-feed lubricators.....Nathan Manufacturing Co.
Bell-ringer.....Gallmar
Front and back couplers.....Brooks
Safety valve.....Ashton Valve Co.
Muffler.....
Sanding devices.....Dean—U. S. Met. Packing Co.
Injector.....1 No. 9 Nathan, 1 No. 8 Ohio

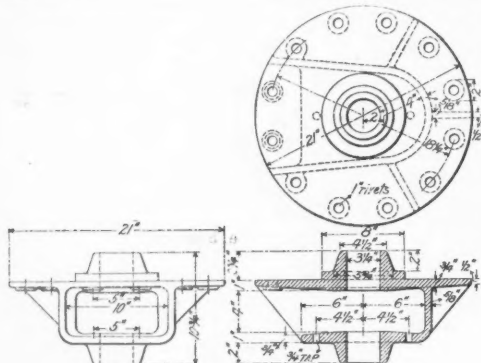


Fig. 9.—Casting for Attaching Drawbar Rigging.

Driver brake equipment.....Westinghouse
Tender brake equipment.....
Tender brake beam.....Central
Tender brake shoe.....Brooks
Driver brake shoe.....Ross-Mehan
Air-pump.....9 1/2 in.—Westinghouse
Air-pump governor.....
Steam gages.....Ashton Valve Co.
Engine truck springs.....French
Driving springs.....
Tender springs.....
Piston-rod packing.....U. S. Met. Packing Co.
Valve-rod packing.....
Crank pins.....Cambria Iron Co.—Coffin-treated steel
Bearing surfaces.....Cicero bronze—Hewitt Manufacturing Co.

Argument Against the Missouri Two-Cent Fare Bill.

The passenger business of the railroads has its basis on the density of the population in the territory through which it runs. Missouri is sparsely settled, consequently her railroads carry a small passenger traffic per mile of road operated, as can be seen by the following table:

	Population per sq. mile.	Pass. rev. per mile of road.	Av. pass. rate per mile, cents.
Missouri.....	39	\$997	2.245
Illinois.....	63	2,475	2.340
Ohio.....	90	1,951	2.200
New York.....	122	4,513	1.930
New England.....	200	4,422	1.830

People ask, if European roads can make low rates, why cannot American roads? European rates do not however, average low; none are as low as ours, except on slow trains, and in cars not finished with cushioned seats, water, heat and other luxuries considered requisite in this country; and in Europe they charge extra for baggage. The European rates per mile are as follows (cents per mile):

	1st class.	2d class.	3d class.
United Kingdom.....	4.42	3.20	1.94
France.....	3.86	2.86	2.08
Germany.....	3.10	2.32	1.54

Michigan is referred to as having low rates, but the question is misunderstood. A law was passed there in 1890 grading the railroads according to passenger earnings, those earning more than \$3,000 per mile annually being permitted to charge but 2 cents, and when less the rates increased to 3 1/2. No road in Missouri earns \$3,000 per mile, and the Michigan law applies only to the Chicago & Grand Trunk between Port Huron and Chicago. Were the through traffic taken out of the Missouri business, the local traffic would not yield enough to warrant running the trains. The Chicago & Grand Trunk has tried the 2-cent rate in Michigan for six years at a loss.

The effect of such a reduction in rates as you have under consideration will be serious. In the first place, your railroads will lose 22 per cent. of their passenger earnings, or about \$1,500,000 yearly revenue in this state alone, and then will follow serious losses in Illinois, Iowa, Minnesota and Wisconsin, the result of readjusting through rates to correspond to those through Missouri. Apply the same rate of reduction to the entire passenger business of the roads which have lines in Missouri, and the decrease in earnings will amount to \$5,500,000 annually. Perhaps, after that will come similar reductions in all the Northwestern states, not because warranted, but as a consequence of Missouri's action, resulting in a loss of not less than \$9,500,000 annually. What a serious, fearful business disturbance to contemplate.

Then must follow that effort to further cut down expenses, of which we have seen so much during the past few years, during which time no new work has been done, only the most important repairs have been made, and workmen by the thousands have been laid off or put on short hours, with the consequent decrease in the trade of those thousands of others whose business is dependent upon the prosperity of these railroad employees. Some passenger trains which the railroads feel warranted in running to-day would have to come off and train service be cut down wherever possible. While every effort would be made to get the two-cent rate in every case by abolishing many lower rates, the revenue would nevertheless decrease about as I have stated and the character of service will necessarily deteriorate in proportion.

I have tried to explain (1) that the rates in Missouri are not high, in fact, nor by comparison with those in force elsewhere. (2) That the cost of carrying passengers exceeds the revenue to-day, and any reduction in the rate will add to the loss. (3) That lower rates will not materially increase the traffic, as shown by actual experience and in the opinion of the best judges, and that when lower rates will accomplish such a desirable result, the reduction will be made voluntarily. The average distance traveled in Missouri by each

passenger is 37 miles. Those who travel much, or on a wholesale basis, as it is called, get reduced rates which are offered to all persons on the same basis; those who do not travel much have little interest in a two-cent rate of fare. It seems to me, therefore, that the proposed reduction would benefit no one materially, while it would seriously injure the railroads.

The Chicago correspondent of the New York *Evening Post*, writing on the above subject, Feb. 1, says: Officials have not for some years been so worked up over prospective hostile legislation as they are now. The legislatures now in session in Nebraska, Kansas, Illinois, Iowa, Missouri and Wisconsin have, at the instance of the commercial travelers, bills before them to make a maximum passenger rate of two cents a mile. The fight has reached a stage where both sides are straining every effort to win. The railroads have called to their aid the labor organizations on their lines. At all points where they have shops throughout the states named, they are suggesting to their men to form associations with a view of protecting their own interests. These associations, realizing what the forced rate reduction would involve to them, are bringing pressure to bear upon their representatives in the legislative bodies to vote against the bills. The leading officials have also been before the legislative committees and presented arguments against their passage. They have all had a hearing, but the committees having the bills in charge have reported in favor of them.

New Gear Cutter Grinding Machine.

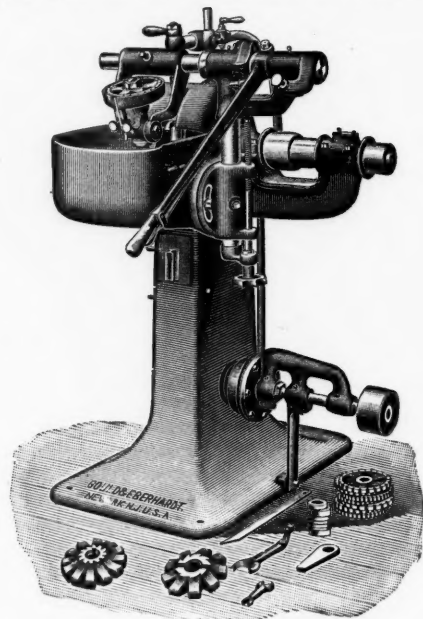
The accompanying engraving shows a gear cutter grinding machine, which is designed with the view of grinding either gear or milling cutters radially and equi-distant, and at the same time to overcome heating the cutters. The machine has been designed and patented by Gould & Eberhardt, of Newark, N. J., who write as follows in regard to it:

"It was the pressing need and demand for a machine of just this kind that forced us to design this one, as we could not purchase a machine anywhere to accomplish our purpose. A machine was needed to properly grind the ordinary rotary cutters and also to grind our radial gang cutters so that we were forced to design a new type of gear cutters, which would stand the strain to which the cutters are being subjected. In our own shop we were ruining expensive cutters by improper grinding, and judging from the correspondence with others, we concluded that many other manufacturers had experienced the same difficulties. In designing this machine one of the greatest obstacles was found in keeping the cutters cool and accurate. With our machine an inexperienced workman can grind cutters without the slightest danger of injuring the cutter. It is a very essential point to keep the cutters sharp, for they can then produce from 30 to 50 per cent. more work than otherwise."

The grinding of these cutters has always been a matter of considerable experimenting, as with the old dry grinder, cutters were too frequently ruined. Through the old method a workman was apt to grind some teeth either too much or too little, and draw the temper of the cutting edges. Consequently, the higher teeth would do all the work and soon heat, lose their temper and become dull. Before the introduction of this machine in grinding gangs of cutters, it was necessary to either separate the cutters and grind each one separately or to grind them slowly and cautiously in gangs. Through the former method, it was very diffi-

This saves considerable time in grinding gangs of cutters. The almost direct connection between the lever and the cutter gives the operator that sensitive touch which is necessary in grinding cutters by hand. Means are also provided for determining the depth of the cut.

Gangs of cutters can be ground at one setting in a very short time with this machine. Each cutting tooth will be properly ground and at the same time the entire gang



Gear Cutter Grinding Machine.

will be finished radially and equi-distant. It is impossible to heat the cutters, as they are thoroughly flooded by the streams of water as in grinding a single cutter, and a number of the ordinary size cutters can be sharpened about as quickly as a single one.

A skimming pan receives the water directly after it leaves the wheel and frees it from all floating substances and sediment, which would otherwise destroy the bearing surfaces.

The "Standard" Steel Platform.

The Standard Coupler Company is putting on the market a new passenger car platform which is illustrated in accompanying cuts. It is designed with a view to the severe strains to be endured and especially to make use of steel, in a workmanlike and mechanical fashion.

The platform sills are steel I-beams. The main or draft members extend back and through the body-bolsters if iron ones be used, or back to the

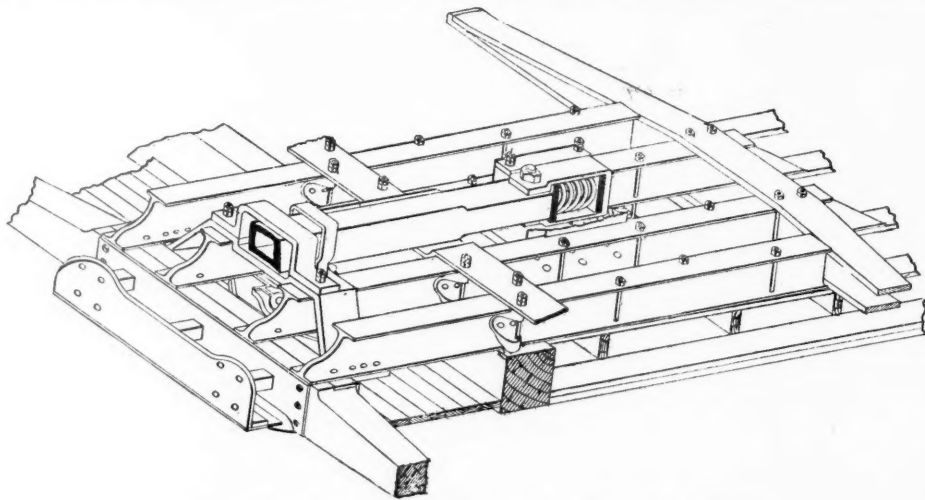


Fig. 1.—Under Side of Car, Showing Standard Steel Platform Attached.

cult and required much time and judgment to grind the teeth equally. To cut the entire gang at one setting also required an amount of acquired skill, and to guard against heating the cutters and drawing the temper it was necessary to work very slowly. These difficulties have apparently been overcome by this new machine. The cutters which are being ground from top to bottom simultaneously are thoroughly flooded by the two streams, one of which is directed upward and the other downward.

The method of feeding the cutter while grinding is also an essential part of this machine. The cutter to be ground is mounted on a spindle with an index dial, which accurately divides the cutting teeth. The cutter is fed forward by a lever, by which the cutter may be swung up in a vertical position simultaneously to admit inspection. A stop regulates the required depth of the tooth, thus insuring an even equi-distant cut around the entire cutter. The feed is also very short, as the emery-wheels grind in toward the center of the wheel and not vertically across the face

body-bolsters if wooden ones be used, while the outside sills abut against them whether they be of iron or wood. Riveted to the upper side of each inner sill, at the end which extends through the iron body-bolster, is a lug plate which comes against the back side of the bolster. The object of this lug plate is to transfer some of the strain on the draft members to the body-bolster.

Fig. 1 shows a perspective view of the under side of a car with platform attached. Fig. 3 shows a plan, elevation and sections of the platform proper, the means of securing the I-beams together and to the car, and the drawbar guide for use with the M. C. B. coupler. This guide, also shown in Fig. 2, is placed a little back of the drawbar carry-iron, and is composed of a helical spring held between the inner sills by a bolt through its center. Over the spring are two pairs of sleeves, one outside of the other, and so arranged that when the drawbar is moved to one side, a yoke, through which it passes, returns it to a central position.

To fasten the I-beam sills to the car, castings riveted to

* Extract from an address before the Missouri Legislative Committee by P. S. Egan, of the Chicago, Burlington & Quincy.

the webs are used. Through each of these castings a bolt passes, which fastens the beam to the end-sill. The object of this is to avoid drilling holes through the flanges of the I-beams at a point where the most strength is required. At points back of the end-sill the flanges are drilled for the bolts.

The buffer has three stems. Each side-stem is attached to the buffer-plate by a cast-hinge and stem-pin and extends through the end-sill to the

think the dummy coupling as applied to-day is better off than on the car. We put it in different positions to see if we could hang the hose up so it would avoid kinks, but in almost every case we found the hose kinking in a very short time.

Mr. E. G. DESOE: If the hose were hung up in the present dummy coupling and hung up right, it would be a good thing. There is no question that something is needed to prevent dust and dirt getting into the hose. There is not one man in a hundred that will hang it up properly. Mr. Hudson, of the Boston & Maine, has a

are capable of furnishing we would probably adopt it, but at present the dummy coupling is a failure and railroad people will drop it until they get something that is more perfect.

Vice-President MEDWAY: The dummy coupling is a good thing if it is in good order, properly located and the hose properly hung up. Unfortunately, however, those conditions do not often prevail. Hence I am not in favor of the dummy coupling. I think the best thing about it is that it is very little used.

The following circular from the Westinghouse Air Brake Company was read:

"We have understood the prime reasons given for the abandonment of the dummy coupling are that it damages the hose (by kinking) and that it is difficult to get the men to hang the hose in it.

"The first reason given is a sound one when the dummy is improperly located, and such is largely the case on existing equipment; the second is a matter entirely connected with the discipline of a railway, with which we are sure the management is capable of properly dealing. In our judgment, neither will justify the omission of the dummy coupling, as our past experience cannot consistently be overlooked. We have known cases where the hose, being permitted to hang down, has become plugged with snow and ice, and which, while not interfering with opposite hose couplings uniting, prevents the operation of a portion or all of the brakes in a train. It is not an infrequent occurrence that piles of cinders and ballast lie between the tracks, through which the hose is dragged (if permitted to hang down), gathering an accumulation of foreign matter, the finer particles of which, although there are two interposing screens, pass on to the triple valve mechanisms, brake cylinders and engineer's brake valves, to their serious injury, while the screens are ultimately clogged and conditions may thus be had which are a serious menace to the safety of air-braked trains.

"Upon the subject of injury to hose by kinking, we may say that our best information clearly indicates that it occurs much more frequently where the cheaper grade of hose, made of poor materials, is used. We are thoroughly convinced that only the best of rubber and cotton duck can be employed in the manufacture of a good product, and when such hose is used we believe much of the trouble now charged to 'kinking' will disappear.

"This company has always specified the best of materials and workmanship for the hose manufactured for it and paid the highest market price.

"We cannot too strongly urge upon users of brakes the retention of the dummy coupling as a preservative of the hose and couplings, and also as a means of excluding much foreign matter from the triple valves, engineer's brake valves, pump governors and brake cylinders, with a corresponding reduction in the cost of maintaining these parts."

Mr. F. H. EDDY: I do not think the present dummy coupling is of any use. I think if we had a dummy coupling that would close the opening it would be very essential. I think that there is more hose spoiled by pulling apart than by kinking; they uncouple very hard. They do not get hitched up with dummy couplings; they hang in the snow when there is snow, and get filled up with it; then when you want to use your brake you haven't any. I think we ought to have a dummy coupling that will avoid these difficulties.

Mr. CRANE: I find with the new style of Westinghouse coupling that we have, that it is not possible for them to be hung up in the present dummy coupling without changing their construction. I have been out and hung hose up on six or eight cars, and the engine came down and struck them so that the hose fell down. They won't stay there.

Perpetual Motion at Last.

William Haney, an engineer for the Cincinnati Southern, has just invented a motor for propelling railway locomotives by means of compressed air. The reservoir, or air retort, which takes the place of a boiler, is charged with compressed air to the extent of 600 lbs. The machine is so constructed that the action of the driver recharges the boiler or air case, compressing the air at the same time. A stock company has just been organized at Lexington, with a capital stock of \$1,000,000, to push the enterprise.—Exchange.

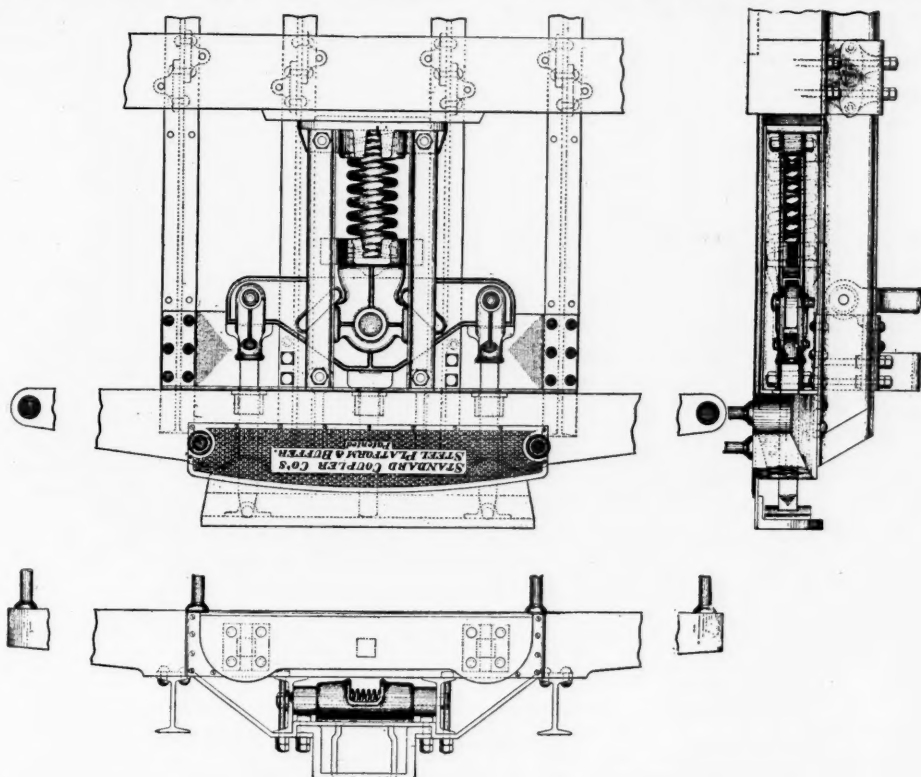


Fig. 2.—Plan, Elevation and Section of Buffer Mechanism, Standard Steel Platform.

equalizer, to which it is connected. The center-stem is fastened to neither the buffer-plate nor the equalizer, but moves through two buffer-guides placed in the end-sill.

It will be observed that the buffing strains and shocks due to coupling of cars are received in a direct line with the sills of the car and at a point calculated to withstand the impact without injury to the car. The buffer and draft rigging are separate, that is to say the buffer is not actuated by the drawbar. The buffer spring has sufficient resilience to permit the cars to pass around curves without undue strain, and still insure constant contact of the buffer face plates their entire length. Fig. 2 shows a plan, elevation and section of the buffing mechanism.

The makers claim for this device simplicity, great strength, moderate cost, economy of maintenance and adaptability to all classes of passenger cars. These platforms have been adopted as their standard by Pullman's Palace Car Co., which has already nearly 50 cars equipped with them, some of which have been in service nearly two years with satisfactory results.

At the New York office of the company, Havemeyer Building, may be seen models of passenger cars equipped with these inventions. The Chicago office of the company is in the Roekery.

The Standard Coupler Company will furnish drawings of this platform adapted to any type of car.

Dummy Couplings for Air Hose.*

Mr. W. P. APPELYARD: The dummy coupling should be left off a car rather than used in its present form. It would thus leave it open for improvement in case it should be thought necessary in the future to have something of that nature. I do not know what reason there is for hanging up hose on a freight car, and I do not believe that it will be possible to bring the trainmen to use it.

Mr. HENEY KOLSETH: The Westinghouse Company believes the dummy coupling is necessary, else they would not manufacture and furnish it. The objection seems to be that it is difficult to make the trainmen hang them up or hang the couplings up properly, and that hanging is liable to kink the hose. I do not think either of these objections is good. The first duty of railroad men is to obey orders. If they were ordered to hang up the hose and did not do so, they ought to be hung up; and if the dummy coupling is placed in proper position, and the hose made of proper material, it will not kink.

Mr. B. F. HUDSON: I have had considerable trouble with sand getting into the valves and cylinders, and thought I would experiment with hose hanging down. An express run of 22 miles was made on Dec. 3, and I have the bottle of sand here which I obtained. Again when the ground was wet a run of 73 miles was made, but I did not get quite so much in the coupler. If the dummy is put up in the proper position there will be no occasion for kinks in the hose if good hose is bought. The shortest space of time for a hose to leak after kinking is one month, and the longest that I have found was one year.

Mr. T. W. ADAMS: We abandoned the dummy coupling probably six months ago. I think we find less broken and leaky hose than we did before we abandoned it. I

device that will prevent dust getting into the hose by closing up the end of the hose automatically, and could be used in place of the present dummy coupling. Snow and ice are liable to do more damage than sand and dirt. The snow blows up into the hose and freezes. Suppose this to be a car standing on a side track. It is afterward taken on to the head end of a train, and the trainmen being in a hurry do not try the brake. Imagine now the consequences if this train is about to descend a heavy grade with no control of the brakes back of the car. This is an important reason why the mouth of the coupling should be closed when not in use.

Mr. A. C. SHEFFIELD: The dummy used to-day does not amount to much, and better be off than on. I think all of our air brake men will agree with me in saying that the dummy coupling should not be abolished, but that a proper dummy should be introduced that will do the work that it is intended for. The most practical dummy I have seen has been attached to a chain and placed in a position so that the hose would hang the same as if it were coupled to another hose.

Mr. W. P. APPELYARD: In regard to kinking of the hose, it is the mere bending that causes it to break. I think it will be found in the large majority of cases where the hose bursts it will break on the side of short curvature. I will say further that I do not see any use for the present dummy coupling. If the Westinghouse people will give us as good a dummy coupling as they

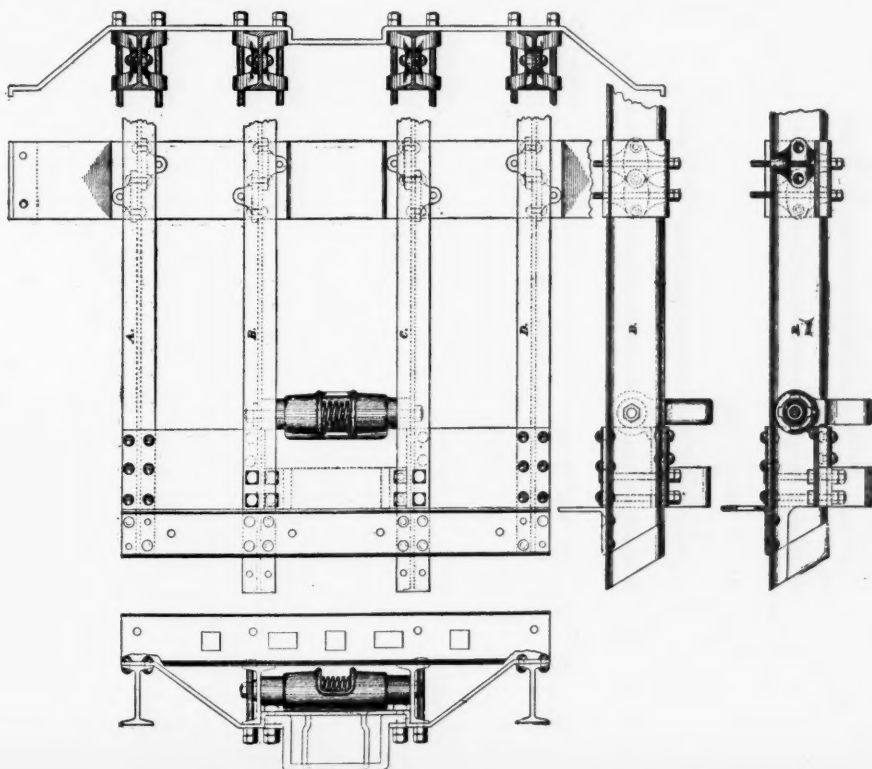


Fig. 3.—Plan, Elevations and Sections of Standard Steel Platform.

* Discussion at the December meeting of the New England Railroad Club.



ESTABLISHED IN APRIL, 1856.
Published Every Friday,
At 32 Park Place, New York.

EDITORIAL ANNOUNCEMENTS.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

The most commendable combination of sentiment and business that we have noted in the railroad field for some time is the scheme of premiums to employees, announced by Receiver Felton of the Cincinnati, New Orleans & Texas Pacific. In this issue we give some particulars of the arrangement for fuel premiums, as gathered from the circulars issued. Premiums to engineers and trackmen are, however, no new thing, and it is chiefly to call attention to those offered to conductors that we now mention the matter. Mr. Brown, of the Fall Brook, whose example in abolishing suspensions is now being followed all over the country, has paid \$60 yearly to his freight conductors (those showing a perfect record) for over ten years, but his example in this respect has not been followed to any extent worth mentioning. Mr. Felton pays a third more money, and he makes it easier for the conductors by recognizing half-year records. This may in many cases prove an important modification, for under the whole-year periods a blot on the record in June tends somewhat to discourage a man for the next six months, whereas under Mr. Felton's plan the man can begin anew on the first of July. We call this move good business, because the payment of premiums is justified by the sound principle of giving efficient men more pay than the inefficient; at the same time it has a value as sentiment, because it makes plain to the employees the fact that the management deals with them as individual men, and not as a body, or a mere collection of "hands."

A hearing on the proposed bill to make ticket brokerage illegal was held by the Senate Committee in Washington last week. The spokesman of the Ticket Brokers' Association asserted that the scalpers worked in harmony with the Interstate Commerce law by preventing the railroads from creating monopolies. He said that scalpers sold very few tickets requiring the use of assumed names unless by arrangement with the roads issuing the tickets. Mr. B. D. Caldwell, of the Western Passenger Association, denied several statements made by the broker regarding the sale by railroads of tickets to brokers in blocks. He also denied that the railroads authorized brokers to disregard the non-transferable clause in tickets. The National Board of Trade at its meeting in Washington last week unanimously memorialized Congress in favor of this bill, and similar action has been taken in one or two Western cities; but the bill has been rejected by the House. While Congressmen, like everybody else, probably know that scalpers get a good share of their business by dealing in stolen goods and by tricky evasions of ticket regulations, and while the argument that scalpers sell only "a few" tickets with forged passengers' signatures is not accepted, it is probably felt that there are many passengers who prefer to do business in this way, and that, therefore, the rejection of the bill will be popular. Moreover Congressmen know that many railroads have been friendly to scalpers. It is true that the railroads have greatly improved their morals in this respect lately, and Mr. Caldwell has well

stated this phase of the matter before the committee; the improvement will have to be maintained for a considerable time before it will affect public opinion much. Fruits meet for repentance will have to be produced for more than one season before the timid Congressmen will even smell of them.

From the Lakes to the Ocean.

The report of the United States Deep Waterways Commission is issued as House Document No. 192. It is a volume of 263 pages containing a great amount of information, more or less closely relevant to the subject, as well as the general discussion by the Commission, and a special report on the technical work by Mr. L. E. Cooley. One of the exhibits is a list, with descriptive notes, of 15 profiles and two maps describing the various available routes from Chicago and Duluth to the seaboard through the Great Lakes, and by the St. Lawrence River or the Hudson River. These profiles and maps are not printed, but we hope they will be later, for they, with the various appendices to the report, will furnish a body of information of immense use and value in future studies of these schemes. There is a special report on the Oswego-Oneida-Mohawk route and another one on the St. Lawrence-Champlain route. One of the exhibits is a treatise of 28 pages on elevations of the Great Lakes and the St. Lawrence and Hudson rivers. Another exhibit is on water levels of the Lakes and the St. Lawrence from 1860 to 1895, inclusive. This chapter occupies 46 pages and gives monthly levels for each of the included years, for a great many different points. There is a topographical description of the basin of the Great Lakes and of the rivers, and a chapter on the effect of gales on Lake Erie. There is a chapter on the water levels of the Great Lakes and the St. Lawrence before 1860, and another one on the ice season. This last chapter fills 71 pages and contains tables of dates of opening and closing navigation for a great number of places, not only along the Lakes and the rivers considered, but throughout the watersheds. We have been thus particular in describing the report in order to indicate to the reader what value it is likely to have to him if he has occasion to study this subject with scientific minuteness, and it is hardly worth while to study it in any other way.

The report deals with a question, or rather a group of questions, of great magnitude and extreme complication; the general conclusions we gave week before last, page 59.

The distance from Chicago to the mouth of the St. Lawrence at Pointe des Monts, is 1,698 miles; to the Atlantic Ocean at Sandy Hook, the distance by the Champlain route is 1642.5 miles; by the Mohawk route, it is 1440 miles. The distances from Duluth, are 67.5 miles greater. In attempting to arrive at what proportion of these routes is restricted channel, a channel with a width of one-quarter of a mile and a depth of 40 ft. is arbitrarily taken as free water. Then we have left, by the St. Lawrence route 333.8 miles of restricted channel, or 19.6 per cent. of the whole. By the Champlain route to the Atlantic the restricted channel is 407.3 miles, or 24.8 per cent. of the whole. By the Mohawk route it is 366.3, or 25.4 per cent. From Duluth, 48 miles of restricted channel must be added to these figures. Roughly speaking, we may say therefore, that from the heads of the Lakes to the Atlantic, 20 per cent. of the total distance, going by the St. Lawrence, will be in restricted channel and 25 per cent., by either route to deep water at New York City.

A very large percentage of this restricted channel can only be obtained by work of some sort, either actual canal or artificial channel or deepened channel. It is assumed that 30 feet at low water is the limit of depth for a navigation of the largest useful capacity. Then it is assumed that the St. Lawrence River below Montreal has been deepened to 30 feet. In fact, the present improvement is for a depth of 27.2 feet. A depth of 30 feet involves 50 miles of work. It is assumed further that the Hudson River below the state dam at Troy has been deepened to 30 feet. The present project is for 12 feet. A depth of 30 feet involves 31 miles of improvement. Making these assumptions the total work required on improved or artificial channel is 262.8 miles by the St. Lawrence route, 304.6 by the Champlain route and 272.3 by the Mohawk route. The proposed Nicaragua Canal is 170 miles long (57 miles in open lake) with 6 locks, lifting the traffic 110 feet above the sea. The new Panama Canal is 43 miles long with 10 locks, and the total lift is 112 feet. (See *Railroad Gazette* of Jan. 15, p 37.)

We do not discover in the report any estimate of the number of locks required, or of the extreme lift to be made by either of the routes. These facts must naturally be ascertained by more careful surveys than have yet been made, but by the Oswego-Oneida-

Mohawk route a summit 444 ft. high must be passed, whence the descent is made to Lake Ontario, 252 ft. above the sea. Lake Erie is 573 ft. above the sea, and to lift the traffic from Lake Ontario to this level will require several locks. It will be seen that the Nicaragua Canal and the Panama Canal, immense and costly as those undertakings are, must still be far cheaper than the aggregate of the artificial channels to be constructed for either of the proposed deep waterways.

The Commission discusses at some length the various possible routes. These begin at Chicago and at Duluth and there can be no question as to what the routes should be until the eastern end of Lake Erie is reached. Then the Commission considers a ship route through Western New York along the general course of the Erie Canal as not desirable. It would involve from 120 to 140 miles more of artificial canal than the route by way of Lake Ontario and the Oswego-Oneida-Mohawk route. It would be crossed by many bridges and might have as many locks as the other route and would have a side hill location across lines of drainage for much of its course. Furthermore, it is considered desirable to bring Lake Ontario into the line of deep-water navigation because of its local commercial possibilities. The question of a trunk route is thus reduced to the natural course through the Great Lakes and from Lake Ontario by the St. Lawrence to tide-water at Montreal or to Lake Champlain, and thence down the Hudson or by Oswego and Lake Oneida to the Mohawk Valley and thence to the Hudson. Each of these three routes is considered as having independent merits. No one of them can be eliminated without sacrificing material advantages, and "it is easy to believe that the eventual growth of commerce will furnish business for all." It will be seen that the imagination of the members of the Commission leads far into the future.

We are disposed to believe, for reasons which we have often stated, that this whole scheme, colossal as it is in cost and in possible results, rests on a fallacy. It is assumed that trade would go from Duluth or Chicago directly to the ocean and thence to any of the foreign ports and that the ship yards on the lakes would at once begin to build ships for the merchant marine of the whole world. The latter assumption is by no means impossible, but the nation could hardly be expected to spend several hundred million dollars to give the lake ship builders an outlet to Chicago.

The former assumption seems more doubtful. It is believed by many who have studied this question with some care, that ships which are built for trading economically and efficiently over long distances of deep water could not be economically sent through a long canal or through hundreds of miles of "restricted channel." The loss in interest and wages account on these great vessels while proceeding slowly through the canal, would be more than sufficient to offset the loss in trans-shipment at the foot of Lake Erie and at the Atlantic harbors. By those who hold to this opinion it is believed that the proposed increase in the capacity of the Erie Canal to permit the passage of larger canal boats, hauled by mechanical traction, is a much more rational way of providing an all-water route from the lakes to the sea.

Nevertheless, the study of this grand deep-waterways project should be carried on, for it is possible that the economy of such a project can be demonstrated, and at any rate the study of it, like the study of astronomy, will stimulate the imagination and enlarge the intellectual field of those who undertake it.

Proposed State Railroad Commissions.

Governor Jones, of Arkansas, and Governor Rogers, of Washington, in their annual messages, both recommend the establishment of State Railroad Commissions. In the state of Washington conventions of lawyers and other prominent citizens have been held to work up interest in a proposed general railroad law. It seems to be agreed by all concerned that passenger rates ought to be reduced in that state, right off, from 5 cents a mile to 3 cents, and that freight rates also should be reduced, especially on wheat from the eastern part of the state to the seaports. In California there is a proposition to abolish the Railroad Commission, to do which it would be necessary to amend the constitution. The *San Francisco Post* very sensibly opposes this move, pointing out that the alternative of a railroad commission is legislative attempts every two years to "regulate" fares and freight rates. The history of California from the completion of the overland railroads down to the adoption of the new constitution, says the *Post*, shows what this means. "That history is one unending succession of railroad fights. In standing off their legislative enemies the railroad corporations were forced into politics until the state resembled an armed camp, on one side standing the pay-roll politicians and on the other the corporations and their political agents."

The railroad commission may not be the best scheme that could be devised for bringing shipper and carrier together, but that it is an improvement upon the legislature is certain."

In South Dakota the legislature sitting this year will be asked to pass the Wheeler bill, which is a proposition to establish a railroad commission, with powers similar to those exercised by the Railroad Commissioners in Iowa. This proposition was quite generally discussed in the campaign, previous to the November election, and according to the *Press*, of Sioux Falls, was universally favored. The *Press* says that the railroads have heretofore had a powerful lobby at each session of the state legislature, and that if the railroads rightly understand their own interests they will now withdraw their legislative agents and "trust the people to attend to their own affairs." If the railroads "accept the situation gracefully" the legislature will be moderate in its requirements.

In Tennessee there is a proposition, presented in the Senate by Mr. Claiborne, to establish a railroad commission of three members, one to be elected from each of the grand divisions of the state. The salary named is \$2,000 a year for each member.

In Missouri a bill has been favorably reported to reduce the salaries of the Railroad Commissioners from \$3,000 a year to \$2,400.

In Colorado a bill has been presented by Mr. Crowley to establish a commission of three members with salaries of \$2,500 each. In New Jersey a commission bill has been presented, embodying the Governor's views on the subject.

In Kansas it is proposed to revise the law governing the Railroad Commission, to make it more like that of Iowa, the commissioners to have full power to fix all rates, both freight and passenger, though it is provided that, in fixing rates, the Commissioners shall not take as evidence the rates in any part of the United States, except of such railroads as may be operated under the same conditions as exist in Kansas. There is also an additional section, not found in the Iowa bill, providing that the Commissioners, in fixing rates, shall be governed by the earnings of the railroad for the next preceding year, and shall adjust the tariffs of that road so that it may make a profit of not to exceed 6 per cent. on its assessed valuation for taxation.

So general a movement indicates, in all probability, a strengthening of sentiment, and it is not unlikely that we shall see some of these laws actually passed. More or less sentiment in favor of the establishment of railroad commissions has been manifest in these states in previous years, and it may be that it is no stronger now than heretofore, but its persistency indicates to the contrary, and each additional year of the continuance of commissions in other states, some of which have lately shown slight signs of improvement, tends to crystallize public opinion everywhere. In California, as above noted, the advantage of having a Commission as compared with former conditions is marked, in spite of the fact that the Commission law there is a poor one, and that the Commission in that state has generally been inefficient.

The Tennessee proposition, to have the three Commissioners from three different sections of the state, is bad; for the first qualification of a Commissioner, after personal integrity, should be acquaintance with the business to be dealt with. Aside from this, the main criticism to be noted concerning all of these bills is the light-minded way in which their authors assume that an annual salary of \$2,000 or \$2,500 is enough to secure competent men to deal with the intricate and important questions affecting the transportation interests of a whole state. Governorships and other high offices are often accepted by men of dignity and ability, in spite of small salaries, because of the honor attached to them, but this condition does not apply in the case of a railroad commissionership. If a man of well-known high personal character and good general business ability—there is no hope of getting one who adds to these the special qualifications for a railroad commissionership—be found available, he is pretty sure to be glad to retire from the office by the time he has learned how to decently fill it. A state that can afford but \$6,000 for a railroad commission had better spend it upon one man than upon three.

Economy of Electric Car Heaters.

A test was recently made by Mr. B. J. Jones, Superintendent of the South Chicago City Railway, of six electric heaters in a car running on that road. The results were figured in two ways: first, on the basis of fuel cost only, and, second, on the basis of fuel, oil, waste and wages of employees in the engine department. These results are given in the table below. Referring to the two methods, Mr. Jones writes us as follows: "The entire plant was put in to generate current for propelling the cars and should we use any for heating, the expense charged to the heating would be the actual extra cost of generating current for it, which is, in our case, the cost of fuel only, the other expenses in connection with the plant remaining the same."

These heaters, furnished by the Consolidated Car Heating Co., of Albany, are made so that five gradations of heat can be obtained by turning a five-point regulating switch. The cost in each case was reckoned for a day of 18 hours, and the electric pressure was kept constantly

at 525 volts. The tabulated data of the test are as follows:

Point.	Watts per hour.	Cost on basis of fuel used.	Cost on basis of entire expense.
First	1,100	\$0.048	0.13
Second	1,500	0.061	0.175
Third	3,800	0.163	0.442
Fourth	4,900	0.211	0.572
Fifth	6,500	0.28	0.76

The cost of fuel for generating one kilowatt per hour may be found by dividing the amounts given in the last two columns of the above results by 18 to reduce the cost to cents per hour, and then dividing these quotients by the kilowatt per hour obtained from column 3. (A watt equals 1,000 kilowatts.) As a result of these computations, it will be found that the cost of fuel for generating one kilowatt hour was \$.0024. The cost of generating one kilowatt hour, including fuel, oil, waste and wages of operating force in the engine department was \$.0065.

By taking the first value given it will be seen that the cost of fuel alone for a kilowatt hour is less than one-quarter of a cent, or roughly three-quarters of a cent per K.W. hour to heat a car. This value, however, is too low for an average one, and as the tests in Chicago were made when the weather was moderate we cannot tell what is a fair average for the watts used per hour in order to make the car comfortably warm during the cold weather. Mr. Jones intends to repeat the test when the outside temperature is about zero, and we intend to give these results later. It will be understood, of course, that the amount of current used will be the same for the different points regardless of the temperature of the car. What we are unable to obtain is the average amount of current necessary to properly heat cars for a range of temperatures ordinarily met with in the winter time.

We might add that in most cases it would be unfair to take the results of the cost when figured on the basis of the fuel used as the true values. Where many cars are operated, the cost of the labor, fuel, wear, etc., is an important item and amounts to considerable.

We find in the *Proceedings* of the Engineers' Club of Philadelphia, for July, 1895, that Mr. James Christie gives the results of his investigation on the cost of car heating in the following words:

"I had occasion recently to investigate the cost of car heating by the current. The cars were the ordinary 16-ft. bodies, each having four Burton heaters under the seats. The heaters are connected in series, each having a resistance of 35 ohms. These required for each car 3½ amperes of the 500-volt current. Allowing for the usual losses, this can be traced back to an equivalent of 3 H. P. per car—at the station engine—or in the case under consideration, to 12½ lbs. of anthracite pea coal per car per hour at the boilers. The value of this fuel was 1.3 cents in the fire-room. Charging this item with its share of the general expense of labor and maintenance made the cost of heating the small cars about 1½ cents per car per hour."

Supposing that the car travels eight miles an hour and the cost of motive power is one cent a mile, then from the results obtained by Mr. Christie the cost of heating the car is about one-fifth of the cost to propel it. This result is apparently very low, but it will be observed that the cars were small and but four heaters were used. Houston and Kennelly in their book on "Electric Street Railways," page 152, say that a fair average for the cost of producing a kilowatt hour may be considered as 1½ cents, so that the expense of heating the cars by electricity during severe weather may be estimated roughly as 4½ cents an hour. If we take the above figure as reliable we find that the cost of electric energy required to heat a car during very cold weather would be about one-half as much as is required to propel it, providing the motive power per car mile was one cent. It is extremely difficult to obtain satisfactory figures bearing on this question, since there are many items entering into the computation that depend on the peculiar conditions of the individual roads. For instance, one company might strive to keep the average temperature of its cars at 70 deg., while another might regard 45 deg. as the proper temperature, or one company might find it necessary to install new apparatus to perform the extra work, while another could use the machinery already in use without any additions.

The Railroad Commissioners of Missouri seem to find it very hard to maintain a cheerful frame of mind whenever the passenger-car gates of the Chicago & Alton come under their notice. They protested against this alleged high-handed invasion of the rights of the citizens of their state, when the gates were first put on, and now we read that, in an interview, Commissioner Hennessey says that several citizens have complained to the Board because they have to buy tickets before they enter the cars. The people believe, he says, that they are entitled to passage whether they pay fare to the agent or to the conductor, and the Commissioner thinks that they are suffering a hardship. The hardship consists in the necessity of "standing outdoors in inclement weather." This must be, we suppose, during the period elapsing between the time that the first passenger steps aboard and that at which the gateman gets ready to examine the ticket of the complainant. Unless the waiting-rooms of the Chicago & Alton are a long distance from the track we should think it would be quite easy to arrange, in rainy weather, to have the passengers wait under cover. At all events we should like to know just how much inclemency had been complained of, before treating this complaint as a very serious one. Mr. Hennessey says that the Alton is trying to induce other roads to put on gates so as to get back the

business which it has driven away from itself by the use of the gates, but he thinks that the other roads will be too democratic and liberal, and too mindful of the comfort and convenience of their passengers, to do anything so unpopular. It appears that the question of ordering the disuse of the gates was some time ago referred to the Attorney-General of the state, who decided that the Commissioners had no power to take any action. Of course, if the gates really inconvenience passengers, the legislature can easily give the Commission all necessary power; but unless the people of Missouri are different from those of the 44 other states, we suspect that the fervor with which some of them defend their right to pay their fare to the conductor is due, in large degree, to the hoped-for chance of getting through without paying it to anybody.

As we write there appears a despatch from Texas to the effect that in that state, where the Southern Pacific has recently put on gates, the people are so mad that they propose to pass a law on the subject at once. Representative Holland will introduce a bill making fares two cents a mile throughout the state, payable at the same rate on the train. The bill provides that all doors to passenger cars on all railroads shall be opened immediately on the arrival of any train at a station, and shall remain open a sufficient length of time to allow all passengers to enter and leave the train. We do not wish to encourage any such thing as a personal encounter in Texas, for the state produces its full share of such incidents already, but if an obstinate gateman wanted hints in regard to "beating" such a law as this it would not be hard to give them to him. Moreover, the numerous trains which can carry all their passengers in a single car will not be interfered with by the law unless it is made more stringent. As most of the legislators of Texas probably patronize the "drama" while they sojourn at Austin, perhaps the railroads might show the absurdity of Mr. Holland's bill by suggesting that payment for seats in theaters be "regulated" by law so as not to be legally due until after the play has begun.

At the time of the World's Fair in Atlanta the editor of the *North American Review* got Governor Atkinson, of Georgia, to write for that magazine a paper on the industrial and business conditions of the South. The Governor painted the resources and possibilities of the Southern States, and especially of Georgia, in proper colors, and then told us that the reason why Northern money and enterprise did not rush into the South was that there was a conspiracy among Northern journals and writers to misrepresent the South and to magnify the risks to life and property in that section. It always struck us that this was a singularly childlike notion to be gravely put forward by the Governor of a great state. If he had pointed out to the people of the South some of the discouragements to investment and enterprise to be found in their laws and in their social customs he would have done those people a real service. Perhaps, however, from the standpoint of a politician there was more to be made by inflaming and prejudicing his people than by really instructing them. This episode has been brought to mind by some information that we have just received concerning the fate of the effort to reorganize the Memphis Car & Foundry Company. This company has been for some time in the hands of a Receiver, and the claims of general creditors were filed under the orders of the Chancery Court. Last September a plan of reorganization was issued which was so satisfactory that it was accepted by 98½ per cent. of the total indebtedness. Now, however, the Chairman of the Reorganization Committee informs the creditors that the plan of reorganization is for the present abandoned. Just before the Chancery Court entertained the final motion in the matter a number of Tennessee creditors withdrew, claiming that their accounts should be paid first in full. Their position is that under the laws of Tennessee creditors, citizens of that state, are entitled to full priority over creditors living in other states. Their action prevents any distribution of cash on hand until this claim is disposed of. If the courts allow such priority it will take all the money in the hands of the Court or the Receiver to settle the Tennessee claims. If the courts uphold the Tennessee creditors only a portion of the proceeds of the sale of the plant would be left for the non-resident creditors. The committee is therefore powerless to move further in the matter of the reorganization until this claim of the Tennessee creditors is settled one way or the other. We regret to have to publish this, but it seems to be a duty to bring such a fact to the attention of dealers in railroad supplies that they may observe due caution in giving credits in Tennessee.

The record of transportation lines, issued annually by the Pennsylvania Railroad Company, shows for the year ending Dec. 31, 1896, a total of 8,977 miles of line. Of this 4,561 miles is east of Pittsburgh and Erie and 4,416 west; that is, the mileage of road is nearly equally distributed, the excess east of Pittsburgh and Erie being only 144 miles. The total length of track in the whole system amounts to 15,642 miles. Of this something like 8,800 miles is east of Pittsburgh and Erie and 6,800 west; as one would naturally suppose, the proportion of track to line is much greater on the eastern system. The total second track is 1,726 miles, and of this more than 1,300 miles is on the eastern system. The

total third track is 395 miles, of which only 36 miles is west of Pittsburgh and Erie. The total fourth track is 275 miles, all but 18 miles of this being on the eastern system. The supply of sidings relatively to length of line is an interesting and important point. The company's sidings aggregate 4,269 miles; that is to say, they would cover about 51 per cent. of the total line of the system with one track. East of Pittsburgh and Erie the length of the sidings is 53 per cent. of the length of the line and west it is 42 per cent. Few of the other large systems are so well supplied with sidings; the New York Central system, however, has 2,392 miles of road and 5,309 miles of track. This includes 1,370 miles of sidings, which would be sufficient to cover 57 per cent. of the road with one track.

The Wheeler-McNamara "graphic car record," which was described in the *Railroad Gazette* of Aug. 19, 1892 and May 19, 1893, is now used in the car record office of the Lake Shore & Michigan Southern to keep track of the whole of that company's cars, over 20,000 in all. Five clerks do the work. With this device a small block about 8 in. long, and of sufficient width and thickness to allow the number of the car to be written on its end, is used for each car, and the blocks are kept in suitable racks, assorted by roads or by the kind of car, or in any way that is deemed desirable. The ends of the blocks may be colored and the numbers may be written or stamped in different-colored inks, thus making possible an elaborate classification. The movements of a car are recorded on a narrow slip of paper which is held in the block by being placed in grooves at the ends. The Wheeler-McNamara apparatus is now being put in use on the Cleveland, Cincinnati, Chicago & St. Louis and it is already in use on the Boston & Albany, the Canadian Pacific, the Chicago, Lake Shore & Eastern, the Chicago & West Michigan, the Detroit, Grand Rapids & Western, the Flint & Pere Marquette and the Pennsylvania Lines west of Pittsburgh.

Some of the farmers in Nebraska have been burning corn for fuel, and a legislative committee, working with the State Board of Transportation, has been trying to find out how much corn has been burned, something of the relative value of corn and coal to the farmers, and whether or not reductions could be made on freight rates for corn out and coal in, which would enable the farmers to sell their corn and burn coal. No doubt the railroad companies would be very glad to receive from these gentlemen an accurate statistical report on this subject. It does seem hard that the farmers should be obliged to burn their corn instead of selling it, when there are hungry people in the world and plenty of good coal in the earth. But after all this is a matter of relative economy and not of sentiment. The notion that it is a terrible thing to burn corn is a survival of the times when a great many people found it hard to get bread and when "corn" meant wheat. The question for the Nebraska farmers now is how they can get one unit of heat cheapest. It may be cheaper for them to raise their fuel on their own farms than to buy coal; it may be that under modern conditions it would be impracticable to get a heat unit from coal in a Nebraska farmhouse as cheap as it could be got from corn grown at the door, especially when the farmhouse is five or ten miles from the railroad track, and there is nothing but a mud road by which to get over this distance.

George B. Roberts.

Mr. George B. Roberts, President of the Pennsylvania Railroad Company, and of the Pennsylvania Company, died last Saturday afternoon at his home near Bala, Pa., and in his death the railroads of the United States lose an officer of the very first rank, if we measure rank by knowledge, talent, achievement and character; and with all his eminent qualities we may perhaps say of Mr.

Roberts that he stood pre-eminent in the railroad world by character. He was unquestionably a man of industry and of great intellectual capacity, but we are inclined to believe that the great achievements of his career have been accomplished more by the firmness, sincerity and rectitude of his character than by any other influence.

Mr. Roberts was born Jan. 15, 1833, in Lower Merion Township, Pa. He came of Welsh stock, his direct ancestor, John Roberts, having come to America in 1683 from Merionethshire, Wales. John Roberts' wife was a young Welsh woman by the name of Pugh, who came over with the same colony. The home of John Roberts was named Pencoyd, and the influence of the Welsh strain is seen in many local names throughout that part of Pennsylvania.

Mr. Roberts was educated as a civil engineer at the Rensselaer Polytechnic Institute, and in 1851 he became a rodman on what is now the main line of the Pennsylvania Railroad. Here he served for a little time on construction and then became Assistant Engineer on the Philadelphia & Erie Railroad, then building, and for

methods which have been most successful in the lives of individuals; that there should be integrity in all things; economy, not parsimony, in expenditures; provision for the future in prosperous times; ownership of what it is wise to control, and keeping up with the general progress of the times. Acting upon these principles, properties were purchased which had formerly been held under leases, and, as the credit of the company improved and money could be obtained on low rates of interest, this policy was extended to the purchase of obligations guaranteed by the company, which were placed in a sinking fund. Profitless enterprises were either abandoned, or the burden was shifted upon those who were benefited by them. The policy thus inaugurated was not carried into effect without much opposition, both at home and abroad; but Mr. Roberts was not a man either to be swerved from his convictions or driven from his place. Under this wise financial policy, which has distinguished his company, its credit rose as high as that of the United States during the period of the greatest business depression the country has ever known. Referring to this policy at one of the annual meetings of the company, Mr. Roberts expressed the hope that it would not die with his administration.

"One of the most important purchases made during his term of office was that of the Philadelphia, Wilmington & Baltimore Railroad. The announcement of this fact by Mr. Roberts at the annual meeting, which occurred on the day the transaction was consummated, created an indescribable enthusiasm in the great body of stockholders assembled. Nobody had suspected it. Announcement had been made on the day previous of its purchase by the Baltimore & Ohio Railroad Company, and this had been used as an evidence of the lack of enterprise on the part of the new administration. The sudden revulsion of feeling caused by his quiet announcement that the road had been purchased by the Pennsylvania Railroad Company swung the pendulum of sentiment to the opposite extreme so violently that the chief opponent of the company's policy joined in the whirlwind of applause.

"Mr. Roberts' evident sincerity in all his relations with individuals or the public was one source of his great strength. A statement of his in regard to the corporation property and its management always carried great weight. His manner was impressive. Speaking deliberately, but without hesitation, in a deep, rich, conversational tone, he would state the case from his standpoint clearly. His sentences were in logical sequence, and there was no apparent effort to make a point.

"There were those who criticised Mr. Roberts' methods as being those of a plodder, who consumed his energies in the study of and

care for details; that this habit of mind incapacitated him from taking a broad view of a question and confined him to the beaten track of experience, to the detriment of the company's progress. These criticisms were heard oftener in the earlier years of his administration than during the last few years, when the full fruits of his conservative policy and grasp of details carried his company through the most depressing period in the country's history with undiminished dividends and unimpaired credit, while the wrecks of two great railway corporations of the 'progressive' kind lay on either side.

"His skill as an engineer was fully equalled by his abilities as an administrative officer and his genius as a financier. His judgment on questions of finance was notably sound, and his associates frequently deferred to him in instances where at first he had stood alone in regard to deciding the policy of the company, in transportation matters connected with the trunk lines and in other grave questions bearing upon the vast interests of which he was the controlling spirit.

"Mr. Roberts was a man of decided domestic tendencies. St. Asaph's Church, at Bala, owes its construction and maintenance largely to Mr. Roberts. He took great pride in the home of his ancestors, where all the children of the family were born since the head of the house came



George B. Roberts.

the next 10 years he was employed on the construction of a number of different railroads. In 1862 Mr. Roberts returned to the employ of the Pennsylvania Railroad, and with that company he has remained ever since. In 1869 he became Fourth Vice-President, and in 1874 was made First Vice-President. In this position his duties covered construction and all civil engineering work, and also the accounting department through the comptroller. In 1880 Mr. Roberts succeeded Colonel Thomas A. Scott as President. We feel that we can do nothing better in the way of an estimate of Mr. Roberts' work and character than is given in the following extracts from an admirable memoir, published in the *Philadelphia Public Ledger* on Monday of this week.

"Few men ever came to the head of a great corporation better qualified by experience and intimate knowledge of its affairs than did Mr. Roberts to the Presidency of this great corporation. He commenced his lifework at the dawn of its existence. To his knowledge of men and the physical characteristics of the system he added that ripe experience in the details of management which his careful attention to every department in the service had brought to him.

"The cardinal principle of his policy was that the business of a corporation should be carried on by those

over from Wales in 1683. It remained for him to give the name of Bala to the place, that being the name of the old town in Wales from which the Roberts family came. The old home was one of Mr. Roberts' most cherished possessions.

"At the semi-centennial celebration of the Pennsylvania Railroad, held in this city last April, Mr. J. Twining Brooks, Second Vice-President of the company, closed an interesting address as follows:

"The company has been fortunate in its Presidents. Of John Edgar Thomson and Thomas A. Scott much might be said. Each in his way was particularly gifted, and contributed greatly to the continued success of the enterprise. The development that has taken place since the present President assumed control, in 1880, has also been marvelous. No organization, however complete, no policy of administration, however perfect, could secure the best results for an empire like the Pennsylvania Railroad Company unless it were controlled by a single spirit, who combined in himself the attributes of supreme rectitude, supreme sense of justice, supreme modesty, complete knowledge of the company's affairs and the devotion of his entire life to its interests. Such a spirit has for 16 years last past directed the destinies of the Pennsylvania Railroad Company."

We may add that the lesson of such a life as that of Mr. Roberts is almost as valuable as the work that he actually accomplished, perhaps more valuable. It combined the solid and enduring qualities which go to make up the highest civilization—patience and fidelity, industry and fortitude, modesty, honesty and piety. In the days when the youth of the land are dazzled by the glitter of sudden but ephemeral "success," such a character stands like a monument to mark the pathway to lasting honor, through dutiful and honest work.

Electric Traction in the Paris Sewers.*

The main sewers of Paris are periodically cleared by means of scrapers carried on cars or boats, which are also used for conveying visitors through the larger sewers under the Rue de Rivoli and the Boulevards de Sebastopol and de Malesherbes. These expeditions take place 14 times a year, in spring and autumn, and about 8,400 visitors are admitted yearly. Until 1894, these cars and boats were drawn by men, but the labor and expense were found to be so excessive that now the traction is entirely done by electric motors, taking current from accumulator batteries on the boats or cars. These main sewers are in section very similar to an ordinary tunnel; but in the floor is formed the rectangular channel for the sewage, while round the roof are fixed the water and compressed air mains, the telegraph and telephone wires, etc.

The sewer under the Boulevard des Malesherbes is the largest; it is 18 ft. 4½ in. wide, 10 ft. high from floor to roof; and the sewage channel in the floor is 3 ft. 5¼ in. deep and 9 ft. 10 in. wide. Boats are used in this channel, which are towed by means of a chain sunk in the sewage channel, which is brought to the surface and passes round a pulley driven by means of a double reduction gear from the motor. The chain, by means of guide-pulleys, makes three-quarters of a turn round the driving-pulley, this pulley being a magnetic one, magnetized by means of two coils, one on each side of it on the axle. Each passenger train consists of six boats, in the first of which is carried the accumulator battery and a towing apparatus; while in the last boat, which is smaller, there is another towing apparatus. The battery consists of 60 elements, giving an output of 60 amperes for 2½ hours, at from 98 to 125 volts; it is divided into two parts, which can be connected in series or parallel as required. The motors run at 580 revolutions per minute; but this speed is reduced by means of the gearing, so that the boats travel at about 1½ miles per hour. The power required for this is from about 2 H.P. to 5½ H.P., according as the boats are traveling with or against the current. The total length of sewers open in this way to the public is about 2 miles, and they are lighted partly by lamps on the foot-paths, or by oil-lamps on the boats.

TECHNICAL.

Manufacturing and Business.

Fraser & Bailey, of 72 Trinity place, New York City, have placed on the market for sale four standard-gage engines which have just been thoroughly overhauled by the Cooke Locomotive and Machine Co. They were built by the Rome Locomotive Co.

The case between Manning, Maxwell & Moore, of New York City, representing the Shaw Electric Crane Co. and the Morgan Engineering Co., of Alliance, O., in the United States Circuit Court of New Jersey, known as the Shaw vs. Worthington case, has been decided in favor of the Morgan Engineering Co. Manning, Maxwell & Moore were represented by Francis Forbes and Frederick H. Betts, of New York City, and the Morgan Engineering Co. by John R. Bennett, of New York City.

R. F. Hawkins, proprietor of the R. F. Hawkins Iron Works, bridge builders, of Springfield, Mass., has made an assignment. The liabilities are given as \$200,000 and assets about the same amount.

The stockholders of the South Baltimore Car Works, of Baltimore, Md., have again come into possession of their property, Receivers Charles T. Crane and F. C. Latrobe having turned it over to them under authority given two months ago. The following Directors have been elected: W. F. Frick, George C. Jenkins, George A. Von Lingen, James Sloan, Jr., Charles Nitze, E. L. Bartlett and W. P. Harvey. The Directors elected James Sloan, Jr., President and Charles T. Crane Secretary and Treasurer. The receivership began on Oct. 9, 1893.

*From a paper by A. Dumas, before in *Le Génie Civil* appearing among the "Abstracts of Papers" published by the Institution of Civil Engineers (British), Dec. 1896.

The Williams & Moore Railway Jack Co. has been formed to succeed to the business of the Safford & Moore Railway Jack Co. The change has been made owing to the retirement of Mr. Safford, whose interest has been taken by Mr. N. W. Williams, Secretary of the old company, who will be President and Treasurer of the new company.

The Dickson Mfg. Co., of Scranton, Pa., has appointed G. A. Ellis its Western Agent, with office in the Monadnock Block, Chicago.

Albert Waycott & Co., of St. Louis, have been made western selling agents for Roberts, Throp & Co., of Three Rivers, Mich.

The Westinghouse Mfg. Co., Ltd., which was recently incorporated in Canada with a capital stock of \$500,000, to manufacture, sell and deal in machinery of all kinds, met in Hamilton, Ont., Oct. 27, and elected the following Directors and officers: George Westinghouse, H. H. Westinghouse, John Caldwell, Paul J. Myler, Pittsburgh; George F. Evans, New York City, and J. M. Gibson and A. Malloch, of Hamilton. President, George Westinghouse; Vice-President, H. H. Westinghouse; Treasurer, John Caldwell; Manager, George F. Evans; Secretary and Assistant Treasurer, Paul J. Myler. It is expected that the works, the purchase of which was referred to in this column Nov. 20, will be opened shortly. The manufacture of Westinghouse airbrakes will be the principal work.

The Boston Belting Co., of Boston, Mass., has established an agency in Atlanta, Ga., with the Graton & Knight Manufacturing Co., 36 and 38 West Alabama street, manufacturers of leather belting. The company will carry a complete stock of the Boston Belting Co.'s rubber belting, hose, packing and other mechanical rubber goods.

The Wagner Palace Car Co. has purchased ten acres of land at Depew, N. Y., and will erect new sheds for storage of Wagner cars. The land purchased lies north of the shops of the New York Central road.

Rider-Ericsson Engine Co., of Walden, N. Y., has been incorporated to manufacture hot-air pumping engines, pumping machinery, locomotives, boilers and engines. The capital stock is \$100,000, and William Murray Sayer, of Brooklyn; Richard S. Sayer, of Englewood, N. J.; Leander A. Bevin, of Northport; L. I., and George H. Robinson, of New York City, are Directors.

At the recent annual meeting of the Franklin Steel Casting Co., Franklin, Pa., the following officers were elected for the ensuing year: President, Charles W. Mackey; First Vice-President, James W. Rowland; Second Vice-President, W. J. Welsh; Treasurer, W. J. Bleakley; Secretary, Robert McCalmont, and General Superintendent, W. B. Corinth.

The stockholders of the Boies Steel Wheel Company of Scranton, Pa., have elected the following Directors and officers: H. M. Boies, Thomas F. Torrey, J. D. Sherer, L. M. Horton, J. M. Boies, E. N. Willard and C. S. Weston. The Directors organized by electing H. M. Boies, President; T. F. Terry, Vice-President; J. D. Sherer, Secretary, and L. M. Horton, Treasurer.

The Steel Tired Wheel Co. of New York was incorporated at Trenton, N. J., Jan. 27. The capital stock is \$4,000,000, one-half the amount being preferred. The incorporators are Hamilton H. Durand, of New York; John J. Tracy, of Jersey City, and Julius F. Workum, of New York. The company proposes to manufacture wheels for railroad use.

The large plant of the Ingersoll-Sergeant Drill Co., at Easton, Pa., which has been working but five days a week for a short time, is now running full time in all departments. A number of foreign orders have been received.

Jenkins Bros., of New York City, manufacturers of valves and packing, will remove their Boston store to 17 Pearl street, about the middle of this month. The store is now under the management of J. D. Stiles.

Henry R. Worthington, of 86 Liberty street, New York City, has opened offices and warehouses in the Ferguson Building, Pittsburgh, for the sale of the Worthington steam pump and other specialties manufactured by him. J. N. Chester has been placed in charge.

William H. Burnham has been appointed manager of the railroad department of the Page Woven Wire Fence Co., Adrian, Mich., as successor to E. G. Fisher, resigned.

The Texas Midland road has purchased a wrecking car from the American Steel Foundry Co., of St. Louis, Mo.

A. S. Caldwell, Bolton Smith, J. C. Neely, H. C. Villipigue and T. C. Looney are mentioned as organizers of the National Car Brake Co., of Memphis, Tenn.

The Pyle National Electric Headlight Co., a notice of the incorporation of which appeared in these columns several weeks ago, has opened an office in the Monadnock Block, Chicago, and is now placing on the market its new headlight, designed and patented by George C. Pyle. Mr. Pyle was formerly connected with the National Electric Headlight Co., and has had long experience with electric headlights. The new device has been in use for some months past, and has given satisfactory results. The total weight of an equipment is 250 lbs. Royal C. Vilas is President of the company; George C. Pyle, Electrician, and Mark A. Ross, Sales Agent.

The consolidation of the American crucible steel business of Thomas Firth & Sons, Limited, of Sheffield,

England, with the Sterling Steel Co., of Pittsburgh, under the title of the Firth-Sterling Steel Co., has been effected. The capital stock has been made \$800,000.

The Simplex Railway Appliance Co., of Chicago, is now furnishing steel bolsters for 200 cars now being built by the Wells & French Co. for Armour & Co.

The mill of the Girder Rail Co., at Wheatland, Pa., which is being equipped with rolls and machinery for the manufacture of street railroad rails, will soon resume operations.

At the annual meeting of the Bushnell Mfg. Co., held in Easton, Pa., Feb. 1, E. L. Bushnell, E. M. Bushnell and H. S. Cavanaugh were elected Directors. E. L. Bushnell was chosen President and E. M. Bushnell Secretary and General Manager.

The Sharpsville Foundry & Machine Co., Sharpsville, Pa., has resumed operations after an idleness of several months, occasioned by the burning down of the foundry. A new structure has been erected on the site of the one destroyed. The following officers have been chosen: President, J. V. Rose; Secretary and Treasurer, George A. Johnson; General Manager, T. M. Egan. The directors are: J. V. Rose, T. M. Egan, George A. Johnson and C. W. Palmer, of Erie.

Iron and Steel.

Robeson furnace, near Reading, Pa., which has been out of blast for nine months, has been started up, giving employment to about 200 men.

The Whitely Malleable Casting Co.'s plant, at Muncie, Ind., has resumed operations after several months of idleness. About 800 men are now employed.

The Port Angeles Steel Co., recently organized at Pittsburgh to erect a large steel plant at Port Angeles, Wash., proposes a capital of \$1,500,000. The plan is to have the subscriptions made by furnace and steel plant workers, boiler makers, machinists and moulders.

At the annual meeting of the stockholders of Central Iron Works, held in Harrisburg, Pa., Jan. 28, the following directors and officers were elected for the ensuing year: Directors, Wm. H. Wallace, New York; J. Fred-eric Kernochan, New York; Charles L. Bailey, Edward Bailey and G. M. McCauley, Harrisburg. Officers, Charles L. Bailey, President; Edward Bailey, Vice-President; G. M. McCauley, Treasurer; S. B. Boude, Secretary.

The Edgar Thomson Steel Works, at Braddock, Pa., are working on an order of 80-ft. rails, which weigh 100 lbs. to the yard. The rails are for the Pennsylvania Company, and notice of the order was given in these columns some weeks ago.

Puddling department No. 1 of the National Rolling Mill at McKeesport, Pa., resumed operations on Jan. 31 after 17 weeks of idleness. The works are now in nearly complete operation.

New Stations and Shops.

The Lima, O., Board of Trade has reported favorably on the proposition of the Cincinnati, Hamilton & Dayton to rebuild its shops at Lima and to make them double their present capacity. The proposition is for a cash donation of \$33,000, and an effort is being made to secure the subscription of the needed amount by citizens.

The San Antonio & Aransas Pass contemplates the erection of new shops at Yoakum, Tex., to consist of a brick machine shop 70x140 ft., a brick boiler and blacksmith shop 70x140 ft., with other small buildings. Plans for these buildings have not yet been decided upon, but it is said that about \$30,000 will be expended.

The new Union Passenger Station at Cedar Rapids, Ia., erected by the Burlington, Cedar Rapids & Northern, and the Chicago & Northwestern, at a total cost of \$225,000, was formally dedicated on Jan. 27.

The San Francisco & San Joaquin Valley has completed a new combination passenger and freight depot at Geneva, Cal., which is between Merced and La Grande, 75 miles from Stockton.

The Central Railroad of New Jersey contemplates extending a new freight station at Freehold, N. J., on their New Jersey Southern division. The structure is to be of frame and to cost about \$3,000.

Interlocking.

The National Switch & Signal Company, of Easton, Pa., has just closed a contract with the Wisconsin Central for an interlocking plant at Silver Lake Crossing, Wis. Electric track-circuit locking will be put in to control the levers of the derailing switches, thus preventing the changing of a route after the same has once been given to a train and the train has passed the distant signal. This is the second plant installed on this road having electric locks on the derailleurs.

Billet Pool to Reorganize.

The meeting of the American Bessemer Steel Association at Pittsburgh on Jan. 29 was very fully attended. In spite of the dissatisfaction which had been expressed by many members of the association, it was decided after considerable discussion to reorganize. The reorganization will be effected by a committee composed of L. S. Bent, of Harrisburg, President of the Pennsylvania Steel Co.; C. R. Hubbard, of Youngstown; Powell Stackhouse, of Johnstown, representing the Cambria Iron Co.; W. E. Reis, of the Shenango Steel Co.; J. G. A. Leishman, of the Carnegie Steel Co., and Henry Wick, of Youngstown. This committee will call a meeting of the association as soon as it is ready to report. In the meantime it would appear that the market remains open.

New Electric Road for Heavy Service in California.

The California Railway Company operates a short line about three miles in length, which runs from the junction of the Southern Pacific Railroad to Leona Heights. The road gives service to Alameda and Fruitvale, both of which are located across San Francisco Bay opposite San Francisco.

The cars used are of standard steam railroad type and the motor cars of the trains are combined passenger and baggage cars. One of these cars is vestibuled at each end and carries on each hood an electric headlight. All the motor cars are provided with air-brakes and chime whistles. Four G. E. 1,000 motors, two mounted upon each truck, form a part of the motor equipment. The controllers are of the K type and each have a magnetic blow-out. The cars are provided with automatic circuit breakers and resistances, and the interior of each car is lighted by incandescent lamps arranged with three lamps to each group. The track is of standard steam railroad construction throughout and bonded for the return circuit. The overhead line is suspended from iron brackets swung from the round poles over a part of the way; for the balance of the distance, the line is suspended from span wires.

Altoona Wheel Tests.

The new Pennsylvania wheel tests are as follows:

"The inspector will select three wheels for test. One wheel must be placed flange downward in an anvil block weighing not less than 1,700 pounds, set on rubble masonry 2 ft. deep, and having three supports not more than 5 in. wide, for the flange of the wheel to rest upon; it must be struck centrally upon the hub by a weight of 140 lbs. falling from a height of 12 ft. Should the wheel break in two or more pieces after 12 blows or less, the 100 wheels represented by this test wheel will be rejected. Should the wheel tested stand 12 blows without breaking in two or more pieces, the 100 wheels represented by it will be regarded as satisfactory as to this test.

"The other two test wheels must each be tested as follows: The wheels must be laid flange down in the sand, and a channel way $1\frac{1}{2}$ in. wide and 4 in. deep must be molded with green sand around the wheel. The clean tread of the wheel must form one side of this channel way, and the clean flange must form as much of the bottom, as its width will cover. The channel way must then be filled to the top with molten cast iron, which must be hot enough when poured so that the ring which is formed when the metal is cold shall be solid or free from wrinkles or layers. The time when the pouring ceases must be noted, and two minutes later an examination of the wheel must be made. If the wheel is found broken in pieces, or if any crack in the plates extends through the tread in either of the wheels tested, the 100 wheels represented by the two test wheels, will be rejected. Some wheels under this test burst with some violence before the metal has become solid, throwing the molten metal some distance. As it takes about one minute for the metal to solidify, it is well to use a little precaution for that time. In order to avoid spitting during pouring, the tread and inside of flange of the wheels submitted to thermal test should be covered with a coat of shellac. Wheels which are wet or have been exposed to snow or frost may be warmed sufficiently to dry them or remove frost before testing, but under no circumstances must the thermal test be applied to a wheel that in any part feels warm to the hand."

For the Improvement of the New York Harbor Channel.

Col. G. L. Gillespie, Corps of Engineers, in charge of harbor improvements at the port of New York, has submitted a report on the deepening of the main ship channel from the Narrows to the sea to get 35 ft. at mean low water. To obtain a channel 1,000 ft. wide and 35 ft. deep, it will be necessary to remove 12,000,000 cu. yds. of material, at an estimated cost of \$1,740,000. This includes building four dredges at \$100,000 each. These dredges could complete the work in four years. Should a channel 1,500 ft. wide and 35 ft. deep be made, 26,000,000 cu. yds. of matter would have to be dredged at an estimated cost of \$2,772,000. This includes building five dredges at \$100,000 each. If a channel 2,000 ft. wide and the same depth should be made it is estimated that it would cost \$4,180,000, including the cost of six dredges. These figures are based upon the net cost of the dredging heretofore done in the harbor by the United States dredge. Should the work be done by contract, these figures should be increased 20 per cent.

THE SCRAP HEAP.

Notes.

Brown's discipline has been adopted on the Maine Central.

The reports of the fire at East St. Louis on Jan. 26, as given in the St. Louis papers, indicate that it was only the freight office that was destroyed, and that the loss was only \$5,000.

The United States Supreme Court, by a bare majority, has affirmed the validity of the Ohio law regulating the taxing of express companies, and also sustaining the Indiana law taxing telegraph companies.

At Jackson, Tenn., on Jan. 15, a car of the Illinois Central was loaded with 169 cylindrical bales of cotton, weighing 68,656 lbs. This is said to beat the record recently made on the Missouri, Kansas & Texas.

At East Norwalk, Conn., on Jan. 27, an entire section gang, consisting of a foreman and four men, was killed by a train. The men stepped out of the way of a passenger train and were struck by a freight.

Sheriff Ellison, of South Carolina, who some months ago chained a locomotive to the track in order to enforce a judgment against the Southern Railway, has been arrested on a charge of obstructing the mails.

Passenger train No 15 of the Southern Pacific was

stopped by robbers near Roseburg, Or., on Jan. 29, and the express and mail cars were rifled. The safes were blown open, and the express car was set afire by the explosion and burned up.

The St. John (N. B.) *Telegraph* reports that the Canadian Pacific has about 800 carloads of export freight held along the line near that city awaiting ships. Only 300 of these cars are reported as containing grain. Evidently the demurrage bureau in St. John, if there is one, must find it necessary to suspend its rules now and then.

Andrew Feagin has been convicted at Birmingham, Ala., of removing a rail from the track on McComb's Trestle, Ala., on the night of Dec. 22. Feagin seems to have been convicted on the testimony and confessions of his four allies. It was about three days after this that the Cahaba River wreck occurred, killing over 20 persons.

The Northern Pacific (the reorganized company) has renewed the Pullman Palace Car Company's contract for 10 years from Jan. 1. The contract with the old company expired Oct. 1. It is said that the Wagner Company made a strong contest for the contract and that the railroad now secures much more moderate rates than heretofore.

A press despatch reports that the car shops of the West Shore Railroad, at Frankfort, N. Y., were completely closed on Jan. 30. The unfinished work on hand was sent to the New York Central shops at West Albany, together with some of the machinery. It is said that 300 men are thrown out of work at Frankfort. The locomotive-repair shops continue at Frankfort.

Washington despatches of last Saturday stated that the House Commerce Committee had definitely laid aside the bill to repeal the anti-pooling law, the members believing that the bill would fare no better in the Senate than it did last year. The Transportation Committee of the National Board of Trade, which held its annual meeting at Washington last week, reported a resolution favoring the pooling law, but it was rejected by the meeting.

The Grand Jury in New York City has returned an indictment against the Metropolitan Traction Company for running its cable cars at too high speed around the reverse curve at the intersection of Broadway and Fourteenth street. There is much travel at this point and the cars have to be run around the curves at the full speed of the cable, the fixtures in use being such that if the grip is released on the curve the cable cannot be again gripped.

The establishment of experimental farms on the line of the Burlington & Missouri River road in Nebraska was recently noted in these columns. The company will employ an expert to visit the several farms every week during the season, and samples of the soil are to be forwarded every day from each farm to the State University, where tests will be made to determine the percentage of moisture. The progress of the work on the farms will be made public for the benefit of farmers, and at the end of the season a complete report will be made of the results.

The Baltimore & Ohio has secured the indictment by the Grand Jury at Chicago of 12 men for participation in the forgery of passes. The press reports do not state that any of the men have as yet been arrested. The Chicago papers have published sensational accounts of large losses by the road and of extensive operations by the accused men and by scalpers, both in passes and in tickets; but we understand from an officer of the road that there is no complaint of forgery of tickets and that only four fraudulent passes were used before the crime was discovered.

The President of the Mobile & Birmingham has announced to the farmers along his road that he will give annual passes for the year 1898 as premiums: (1) To the farmer who will produce the largest quantity of lint cotton on 20 acres; (2) to the farmer producing the largest quantity of corn on 30 acres, and (3) to the farmer producing the largest quantity of hay on 30 acres. The cotton and the hay must be shipped to market over the Mobile & Birmingham road, and no one can compete who does not ship his entire cotton crop over that line. Suitable restrictions are prescribed. If a man secures more than one prize he can have the second or third, or both, issued to members of his family.

Large Coal Contracts.

Boston papers report that the New York, New Haven & Hartford Railroad, the Merrimac Mills, the West End Street Railroad and other large consumers of coal have just bought about 900,000 tons of soft coal, mostly from the New River mines, on the lines of the Chesapeake & Ohio Railroad. It is said that these sales were made at a reduction of 35 to 50 cents below the prevailing rates and that they were brought about by President Ingalls, of the Chesapeake & Ohio; and he is accused of making this serious reduction in order to take business away from the Baltimore & Ohio, which has lately secured a large share of the grain traffic from the West.

Ohio Coal Traffic Agreement.

Messrs. Monsarrat, President of the Columbus, Sandusky & Hocking; Connor, Chairman of the Board of Directors of the Wheeling & Lake Erie, and Burke, comprising a special committee of the Ohio Coal Traffic Association, have agreed on a plan for the distribution of the Ohio soft coal traffic, and the *Journal of Commerce* states that the percentages are as follows:

	Per Cent.
Columbus, Hocking Valley & Toledo.....	28.19
Toledo & Ohio Central.....	28.19
Wheeling & Lake Erie.....	16.44
Cleveland, Lorain & Wheeling.....	12.97
Columbus, Sandusky & Hocking.....	12.00
Baltimore & Ohio.....	10.00
Pennsylvania (Washington Valley).....	7.00

It is said that representatives of the companies interested, although not wholly satisfied with the distribution, have informally assented to the schedule for the sake of keeping peace in the trade. At the recent Columbus meeting the roads demanded percentages which aggregated 114 per cent., and it became the duty of the special committee to scale the respective claims down to an aggregate of 100. The Columbus, Sandusky & Hocking demanded and received an increased percentage of the traffic in consequence of its having increased coal dock facilities. The fact that there is trouble in the Eastern soft-coal trade had a harmonizing influence, it is said, on the deliberations of the Ohio men.

The *Journal of Commerce* says that the Columbus, Sandusky & Hocking has been standing out for 15 per cent. of the business, or 5 per cent. more than it has carried in any of the last three years and continues:

"The allotment of 12 per cent., as shown in the above table, is conditional to the following extent: The road is to be given a total of 13½ per cent. provided it can do so by fair means. The association will treat this 1½ per cent. as a sort of neutral ground, and the officers of the association are not to be enlisted to make up to the Sandusky & Hocking any tonnage in excess of its regular allotment of 12 per cent. On the other hand, if the Sandusky & Hocking can get the extra 1½ per cent. fairly, the loss will be borne by all the other lines in proportion to their allotments. The new agreement, if adopted by the Executive Committee of the association, is to continue for one year.

"The Baltimore & Ohio representatives at the Chicago conference served notice that unless a settlement was reached at the meeting appointed for Columbus last week, their consent to the proportion granted them would be withdrawn. It was evident also in the conference that there was no love lost between the Pennsylvania and the Baltimore & Ohio, their attitude being due presumably to their strained relations in the Eastern soft-coal territory."

Telephone Privileges in Philadelphia.

A committee of the Philadelphia Trades League has made a report urging the citizens to support the City Council in refusing to grant the Bell Telephone Company further rights in the streets for the construction of underground conduits without better compensation to the city or an agreement to reduce telephone rentals. The report discusses the history of telephone privileges in Philadelphia since 1879, when the Bell Company was first authorized to put up overhead wires. An ordinance requiring all wires to be put underground was introduced in 1882, but it was then believed to be impracticable to use the wires underground and nothing was done until 1886. In 1888 the Bell Company received extensive underground privileges in the center of the city. Three years later additional privileges were asked for, but the City Council refused to grant them without compensation. In 1895 the Board of Highway Supervisors, in what is characterized as an improper exercise of its functions, granted the Bell Company permits to open streets and lay conduits. These permits were very extensive, including streets in all directions, aggregating many miles. Thus far the consummation of this plan has been blocked by the refusal of the Director of Public Safety to permit the erection of terminal or distributing poles. Among the lines which the Bell Company now desires to lay is one in Eleventh street, to connect with a costly new building which it is putting up. The Trades League Committee hopes that the permit for this line, which will be necessary to enable the company to use the new building, and those for all the other proposed lines, will be withheld until the company makes better terms with the city.

Failure of Criminal Prosecution of a Receiver.

In a case in the United States Court in Pennsylvania a few weeks ago the Receivers of the Philadelphia & Reading were fined \$200 for alleged violation of the law requiring animals in transit to be fed and watered every 28 hours or oftener. It appears that this decision was appealed on the ground that the law does not apply to a Receiver in charge of a road, and Judge Butler has just filed a decision sustaining this appeal. The Receivers are simply officers of the court and cannot be punished. In reply to the argument that this is an absurd nullification of the law the Judge says, in substance, that if cattle being transported on a road operated by Receivers suffer for lack of food and water, the persons directly in charge of the stock may be punished. Continuing, Judge Butler says: The instances cited by the prosecution, in which courts have enforced the Interstate Commerce law and other statutory provisions relating to the management of railroads and their property generally while in custody of the law are generally immaterial. Such cases bear no relation to this. Of course, courts will enforce observance of these provisions in their management of the property and business when attention is called to the subject. The question whether a criminal proceeding may be prosecuted to punish their officers under the section in question is a totally different one. The courts permit suits to be brought against such officers for debts or other liabilities incurred as a means merely of ascertaining the amount due, but judgments recovered even in such cases can only be enforced by consent and direction of the Court.

New York Mileage-Ticket Law.

The New York Supreme Court, Appellate Term, has decided against the Erie Railroad in the suit of Dillon, a passenger, who was refused a mileage book. The company claimed that the law did not apply to the Erie, because that road is not restricted to the rate of three cents a mile; also that it interferes with interstate commerce; and, furthermore, that it deprives the company of its property without due process of law. The decision holds that fares on the Erie are restricted by the law of 1890, that the mileage book law does not interfere with interstate commerce, and, furthermore, that "we may concede that the act was intended to apply to inter-state as well as intra-state transportation. While invalid as to the former, it is still to be supported as to the latter. . . . Finally, the act bears intrinsic evidence of legislative intention to confine its provisions to intra-state transportation. Such an intention is fairly inferable from the language, 'every railroad corporation operating a railroad in this state,' etc. The alleged contract which it is claimed this act impairs is a section of the act of 1832, incorporating the New York and Erie Railroad Company, that 'it shall be lawful for the company . . . from time to time to fix, regulate, and receive the toll and charges by them to be received for transportation,' etc. The Court holds that the only power here granted was to fix reasonable charges, and that the state did not, as claimed by defendant, surrender the power to fix a maximum for this company, leaving it to the courts to determine what was reasonable, free from all legislative control. Finally, it is held that the reasonable regulation of a business carried on under special privileges from the state, or affected with a public interest, is not a taking of property without due process of law, as inhibited by the Constitution.

The New Dry Dock at Brooklyn.

The Secretary of the Navy has been notified by the contractors who are building the new dry dock, at the Brooklyn Navy Yard, that the dock will be delivered to the government on Feb. 16, completed and ready for service. The dock has a total length of 670 ft., which is nearly 100 ft. longer than any other on the Atlantic coast under the control of the navy. It is built of oak, with a concrete floor. At mean high tide the dock will carry 29 ft. of water over the sill. Its cost when completed will be about \$600,000.

Ventilation of an Underground Railroad.

The question of the ventilation of the Metropolitan Railway (London, underground), is about to form the subject of an inquiry by a Departmental Committee. The company embodied in the bill which they introduced in Parliament last year a series of clauses providing for an improved system of ventilation. The London County Council, when the measure was before committee, contended that it did not go far enough, and the committee thought that before any definite scheme was undertaken the whole subject of the best means of ventilation for the underground should be thoroughly inquired into.

Sabine Pass to Port Arthur.

The directors of the Missouri, Kansas & Texas Trust Co. have voted to expend a quarter of a million dollars in deepening the ship canal from Sabine Pass to Port Arthur. The work of dredging the channel will be begun early next month, and it is expected to be completed in about four months. The Missouri, Kansas & Texas Trust Co. is going ahead with the work because the government appropriation is not available just now. The company expects that the government will reimburse it for the amount expended. Some description of the harbor and of the proposed improvements was given in the *Railroad Gazette* on Jan. 1.

A Greeting from France.

The French civil engineers, who visited the World's Fair in 1893, held a reunion in Paris Jan. 20. They sent, by cable to Mr. Corthell, their best wishes to friends in America.

Bids for Section 9 of the Boston Subway.

Sealed bids for building section 9, two and three-track subway and station, will be received at the office of the Commission, 20 Beacon street, Boston, Mass., till 12 o'clock m. of Wednesday, Feb. 24, 1897. Each bid must be accompanied by a certified check for the sum of \$3,000. Some of the items are estimated to be as follows: 24,000 cu. yds. earth excavation; 600 tons iron and steel, furnished by Commission, to be set in place; 4,500 cu. yds. concrete and brick masonry. Plans can be seen and specifications and forms of contract can be obtained at 20 Beacon street, Boston. A bond will be required for the faithful performance of the contract in a sum of 2 per cent. of the amount.

Underground Road on Broadway.

Arguments for the extension of the proposed underground road south from City Hall Park to the Battery, New York City, were submitted to the Rapid Transit Commission at their meeting on Jan. 28. Several property owners of lower Broadway and adjacent streets, who had previously opposed the project, stated that they had removed their objections and favored the enterprise.

The Bazin Roller Steamer.

M. Bazin's new roller steamer, or raft, as it might be called, is soon to have a trial at sea. The vessel is fitted with six wheels about 33 ft. in diameter and weighing 90 tons. The weight of the deck is 130 tons and of the motive power 30 tons. To this must be added 30 tons additional for accessories, bringing the total weight of the vessel to 250 tons. The width of the rollers is about 10 ft., which affords sufficient displacement. They are mounted on shafts, which are carried by rigid girders forming the framework of the platform. The length of the deck is 126 ft. and its width 40 ft. It is on this deck or platform that all machinery, stores, freight equipment and accommodation for crew and passengers are placed. It is claimed that only 560 H. P. is required to propel the vessel at a rate of at least 30 knots.

LOCOMOTIVE BUILDING.

The Cleveland, Cincinnati, Chicago & St. Louis has completed the building of another engine at its Bellefontaine shops. This is the second locomotive built at these shops.

CAR BUILDING.

The Mexican Central expects to be in the market shortly for 500 or more freight cars.

The Missouri Car & Foundry Co., of St. Louis, Mo., has been awarded a contract for building 36 freight cars for the Missouri Pacific road.

The Carlisle Manufacturing Co., of Carlisle, Pa., has received a contract from the Penn. Gas & Coal Co., of Philadelphia, for the building of 50 gondola cars.

The Wells & French Co., of Chicago, has received an order from the Indiana Pipe Line Co. for building 25 cars. The company is also building 25 refrigerator cars for the Cleveland Provision Co.

It is stated that M. D. Woodford, President of the Cincinnati, Hamilton & Dayton, is to have built a new private car to replace the one destroyed by fire near Hamilton, a few weeks ago.

The order for cars given to the Ohio Falls Car Mfg. Co. by the Charleston & Western Carolina road, referred to in our last issue, was for eight passenger cars, four combination passenger and baggage cars, three combination passenger, baggage and mail cars, three combination baggage and mail cars and 250 box, 50 gondola, 75 flat, three 8-wheel caboose and five 4-wheel caboose cars. The Lookout Incline and Lulu Lake Railway has also ordered two passenger cars from this firm.

BRIDGE BUILDING.

Aiken, Ga.—The South Carolina & Georgia will be required, by the terms of a new act of the South Carolina Legislature, to do considerable bridge building and trestle work over the railroad cuts on their property in this city during the coming year.

Atlanta, Ga.—An appropriation of \$10,000 has been made for new bridges, and City Engineer R. M. Clayton has prepared plans for replacing the wooden bridge across Bell street with a new steel structure for which bids will be asked.

Bridgeport, Conn.—In connection with the building of a proposed boulevard, a bridge over Cedar Creek, estimated cost \$20,000, is being considered.

Brooklyn, N. Y.—A delegation of business men and property owners from the Seventeenth Ward has called on the Mayor to interest him in a project to build another bridge across Newtown Creek between Franklin street and Long Island City. They claim that a new bridge is necessary to relieve the enormous traffic over the Manhattan avenue bridge.

Cincinnati, O.—The Board of Hamilton County Commissioners asks for bids until Feb. 13 for the substructure and approaches of a bridge over the Cincinnati, Portsmouth & Virginia on Columbian avenue in Columbia Township.

Columbia, Pa.—It is stated that the Pennsylvania Railroad has awarded a joint contract for its new bridge across the Susquehanna River, between this place and Wrightsville. Of the 27 spans in the bridge, 13 will be built by the Edge Moor Bridge Works and 14 by the Pencoyd Bridge and Construction Co. The work is to be begun at once and pushed to completion.

Colville, Wash.—The President has approved the act authorizing the building of a bridge across the Columbia River, in this county.

El Paso, Tex.—The Sierra Madre Construction Co. has petitioned Congress for authority to build or acquire a bridge across the Rio Grande River at this point.

Jenkintown, Pa.—It is said that a jury has recommended that the proposed bridge over Tacony Creek, estimated cost \$3,000, be built.

Linoleumville, N. Y.—The Board of Supervisors has directed County Engineer Henry P. Morrison to prepare plans and specifications for a trestle and steel highway swing bridge, about 2,000 ft. long, over Fresh Kills Creek at this place.

Monroe, La.—The Senate has passed the House bill authorizing the construction of a traffic bridge across the Ouachita River at this place.

New York.—A bill has been introduced at Albany, increasing from \$500,000 to \$850,000 the appropriation for building the new Harlem River drawbridge.

Oyster Bay, L. I.—The plans submitted by Engineer Charles H. Platt for a bridge over Mill Creek, from Bayville to Allen's Point, have been approved by the Secretary of War.

Stroudsburg, Pa.—A new iron bridge will soon be built to take the place of Ken's bridge, crossing McMichael's Creek, which was destroyed by fire Jan. 28. The structure was the largest and oldest in the country.

West Chester, Pa.—The Grand Jury has approved the recommendation for a bridge over White Clay Creek in Britain Township.

RAILROAD LAW—NOTES OF DECISIONS.**Powers, Liabilities and Regulation of Railroads.**

In Texas a railroad is liable for injury to stock sustained while the road is under the sole management of a receiver, who subsequently returns the property without sale, after a large expenditure of current revenues in betterments.¹

In the Federal Court it is ruled that while a railroad cannot, by leasing its line without authority of law, relieve itself of any liability flowing from the manner of its operation, nor, by leasing its line under authority of law, relieve itself of the responsibilities imposed upon it by the law of its incorporation, or of liability in the discharge of the positive duties which it owes to the public, yet a railroad company which has leased its line, under due legislative authority, is not liable for the negligent management of the road over which it has no control.²

In New York it is held that under the statute authorizing railroad companies to borrow money in advance to build their roads, and to issue bonds therefor secured by mortgage on their franchises and property, a mortgage made by a railroad company for such purpose covers after-acquired property, and the rule that a mortgage purporting to cover chattels to be thereafter acquired is only an agreement to give a lien on them as they are acquired does not apply.³

In Alabama a private conveyance to a railroad company for a right of way across lands conveys it subject to existing inchoate interests and liens.⁴

In Massachusetts, one whose land was intersected by the proposed line of a railroad conveyed to the company the right of way, the deed requiring the company to construct a suitable road crossing. Subsequently, the company filed its location, on which the crossing was represented by a dotted line intersecting the right of way, stating that the land taken was most of the way a certain width, but not showing an intention to abrogate the crossing. The Supreme Court holds that the location did not extinguish the landowner's right to a crossing.⁵

In Texas a railroad is not bound to remove from its right of way a natural growth of trees which shade and injure the crops upon the land of an adjoining owner, and also sap such land of its fertility, it not appearing that the roots or branches of the trees penetrate or overhang said land.⁶

In the Federal Court it is held that the power given to the courts to compel obedience to the "lawful order" of the Interstate Commerce Commission, being special and statutory, is strictly limited to the power conferred; and consequently the courts can only grant or refuse compulsory obedience to the order, and have no authority to modify or change it.⁷

The Federal Court in Louisiana decrees that Article 244 of the Constitution of Louisiana, providing that all railroads are public highways, and all railroads companies common carriers, does not have the effect of making a business corporation organized to construct and operate a sawmill and a railroad in connection therewith, which constructs a logging railroad on its private grounds, and operates the same for private purposes, a common carrier, charged with the duties and responsibilities imposed by law on such carriers.⁸

A statute of Arkansas requires that all railroad corporations in the state of Arkansas shall keep posted up, at every freight office, printed schedules of freight rates; and that, for a violation of the act, they shall forfeit and pay for every such offense a certain sum, to be recovered by a civil action "by the party aggrieved"; but that a notice in writing of the violation, and a demand for reparation, must be served by claimant 15 days before the

commencement of the action. The Supreme Court holds that the reparation contemplated by the act was compensation for injuries or wrongs suffered from the failure to post the rates, and that hence only a person so injuriously affected was entitled to the penalty.⁹

Injuries to Passengers, Employees and Strangers.

In Illinois a railroad engineer has ordinarily no authority by inviting a person to board a train to create passenger relations.¹⁰

In Georgia it is held that in construing a special contract embodied in a railroad ticket, and limiting the purchaser's rights, language of uncertain or doubtful meaning should generally be taken in its strongest sense against the company by which the ticket was issued and sold, and in favor of the purchaser.¹¹

In Georgia a passenger desiring to go but a short distance on the train, and fearing that he could not see the conductor in time to make known his wishes, by reason of the rush of passengers, left his seat while the train was standing at a station and went into the baggage compartment, and, while talking there to the conductor in regard to his journey, was injured. There was a notice over the door of the baggage compartment of "No admittance," but the passenger did not see it. The door was standing open. The Supreme Court rules that whether the passenger was rightfully in the baggage compartment was a question for the jury.¹²

In the same state it is held that where a passenger, apparently sick, and in fact so, was ejected from a train a half mile from a station, where he was unknown, without being given time to search for the ticket which he claimed he had lost, or to produce his fare in money, and as a result he suffered a relapse, a verdict of \$2,500 was not excessive.¹³

In Virginia plaintiff, a brakeman of the defendant railroad company, before attempting to couple cars, discovered that their drawheads were damaged, rendering the coupling dangerous, and notified the conductor, whose duty it was to inspect the cars for defects, of such fact, and requested him to signal the engineer to back the train lightly, so that the coupling could be made. The conductor directed plaintiff to make the coupling, but failed to signal for the train to be moved lightly, and, in making the coupling, plaintiff's hand was caught between the drawheads, and injured. The Supreme Court rules that plaintiff did not, as a matter of law, assume the risk.¹⁴

In Illinois the machinery of a grip car having become out of repair, a wrecking crew was called by the gripman, which raised the machinery, and attached the car to a following train, to be pushed to the car barns. The gripman continued to stand at his post, where the rules of the company required him to be while the car was in motion, and was injured because of the failure of the wrecking crew to also raise and chain up a loose and dragging slide bar. The Appellate Court holds that the gripman was not guilty of contributory negligence in remaining at his post, since he was justified in relying upon the work of the wrecking crew as being sufficient to make the performance of his duty safe.¹⁵

In Texas the plaintiff was conductor of a freight train. Leaving a station on a down grade the train parted, on account of a defective coupling, the caboose in which plaintiff was riding dropping behind. Thereupon the engineer stopped the train as he should not have done in the exercise of proper care, and on the approach of the rear section started the engine in such a manner as to cause a second break in the train. Plaintiff was injured in a collision between the rear and middle sections. The Supreme Court rules that the separation of the rear cars by reason of a defective coupling was a proximate cause of the collision.¹⁶

In Alabama, where the engineer moves the train so rapidly that no prudent man would have attempted to make the coupling, the failure of the conductor, who was expected to make such coupling, to do so, is not negligence.¹⁷

In Rhode Island the plaintiff, a brakeman, was knocked from a freight car and injured, while climbing a ladder on its side, by striking a telegraph pole which stood about 3½ ft. from the rail of the side track, but inclined somewhat toward the track, the space between the pole and the top of the car being about 15 in., which was sufficient to permit the passage of a man if standing erect, but insufficient by 7 or 8 in. to allow of his passage while climbing a ladder. The Supreme Court holds that the danger was not so obvious as to charge plaintiff with knowledge of it.¹⁸

In Kansas the Supreme Court rules that where section hands, in repairing a track, place a hand car, loaded with tools, buckets and coats, by the side of the track, within the margin of the highway near the traveled road, in such a position as to be manifestly calculated to frighten horses of ordinary gentleness, broken to travel along the highway, the railroad company is liable to a traveler riding a horse of ordinary gentleness, which took fright at the hand car, and caused injury to the traveler.¹⁹

In Indiana the negligence of a railroad in blocking a street crossing with its train for an unreasonable length of time is held not to be the proximate cause of injuries received by a pedestrian from a fall caused by a defect in the street while making a detour to pass around the train.²⁰

In Florida it is gross negligence in a blind person to attempt to cross a network of railroad tracks at a public crossing unattended, when he knows that trains are passing to and fro at the time.²¹

In Washington the construction of a railroad track, not main line, in the street so close to the curb line as to prevent a team standing clear of the track necessarily injures the abutting property which was for dwelling purposes, so as to entitle the owner to damages.²²

In North Dakota the statute regulating the ringing of the bell and blowing of the whistle at crossings, or a city ordinance regulating the speed of trains, and the giving of signals at crossings, within city limits, is not the sole measure of the duty of a railroad company to protect persons and property at crossings, and does not change the company's common-law obligation.²³

¹ T. & P. v. Watson, 36 S. W. Rep., 290.

² Hayes v. North. Pac., 74 Fed. Rep., 279.

³ Platt v. N. Y. & S. H., 39 N. Y. S., 871.

⁴ Farrow v. N. C. & St. L., 29 South. Rep., 303.

⁵ Hamlin v. N. Y., N. H. & H., 44 N. E., 441.

⁶ G. H. & S. A. v. Spinks, 36 S. W. Rep., 780.

⁷ D. G. H. & M. v. I. C. C., 74 Fed. Rep., 803.

⁸ Wade v. L. & M., 74 Fed. Rep., 517.

⁹ A. & L. v. Harris, 36 S. W. Rep., 186.

¹⁰ O. & M. v. Allender, 59 Ill. App., 620.

¹¹ G. R. & B. v. Clarke, 25 S. E. Rep., 368.

¹² Gardner v. Waycross Air Line, 25 S. E. Rep., 334.

¹³ W. & A. v. Ledbetter, 25 S. E. Rep., 563.

¹⁴ N. & W. v. Amper, 25 S. E. Rep., 226.

¹⁵ West Chicago v. Dwyer, 57 Ill. App., 449.

¹⁶ H. & S. A. v. Sweeney, 36 S. W. Rep., 800.

¹⁷ Ala. Mid. v. McDonald, 20 South. Rep., 472.

¹⁸ Whipple v. N. Y., N. H. & H., 35 N. E. Rep., 305.

¹⁹ A. T. & S. F. v. Morrill, 45 Pac. Rep., 956.

²⁰ Enochs v. P. C. & St. L., 44 N. E. Rep., 658.

²¹ Florida Cent. & P. v. Williams, 20 South. Rep., 558.

²² Patton v. Olympia Door & Lumber Co., 46 Pac. Rep., 237.

²³ Coulter v. G. N., 67 N. W. Rep., 1046.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Chicago, St. Paul, Minneapolis & Omaha, 2 per cent. on the common stock and 3½ per cent. on the preferred stock, both payable Feb. 20.
Columbia & Western, 2 per cent., payable Feb. 10.
Kansas City, St. Louis & Chicago, quarterly, 1½ per cent. on the guaranteed preferred stock, payable Feb. 1.
Rome, Watertown & Ogdensburg, 1½ per cent. on guaranteed stock, payable Feb. 15.
St. Paul & Duluth, 2½ per cent. on preferred stock, payable Feb. 6.

Stockholders' Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Barclay, annual, 204 Walnut street, Philadelphia, Feb. 8.
Erie & Central New York, annual, Cortland, N. Y., Feb. 10.
Los Angeles Terminal, annual, Los Angeles, Cal., Feb. 11.
Missouri Pacific, annual, St. Louis, Mo., March 9.
Mobile & Ohio, annual, Mobile, Ala., Feb. 12.
Norfolk & Southern, annual, Norfolk, Va., March 4.
Pennsylvania & Northern, annual, Betz Building, Philadelphia, Feb. 17.
Peoria & Eastern, annual, Danville, Ill., Feb. 10.
St. Louis, Iron Mountain & Southern, annual, St. Louis, Mo., March 9.
Texas Central, annual, Waco, Tex., Feb. 12.

Technical Meetings.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *International Association of Car Accountants* will hold a convention at New Orleans, La., on Feb. 23, 1897.
The *American Railway Association* will hold its convention at Richmond, Va., on April 7, 1897.
The *National Convention of Railroad Commissioners* will be held at St. Louis, Mo., on May 11, 1897.
The *International Association of Ticket Agents* will hold a convention at San Antonio, Tex., on March 10, 1897.
The *Association of American Railway Accounting Officers* will hold a convention at Richmond, Va., on May 26, 1897.
The *Association of Railway Claim Agents* will hold its convention at St. Louis, Mo., during the last week of May, 1897.
The *Master Car Builders' Association* will hold its annual convention at Old Point Comfort, Va., beginning June 8, 1897.
The *American Railway Master Mechanics' Association* will hold its annual convention at Old Point Comfort, Va., beginning June 15, 1897.
The *National Association of Local Freight Agents' Associations* will hold a convention at Washington, D. C., on June 8, 1897.
The *Association of Railway Telegraph Superintendents* will hold a convention at Niagara Falls, N. Y., on June 16, 1897.
The *National Association of Car Service Managers* will hold a convention at Boston, Mass., on June 16, 1897.
The *Train Despatchers' Association of America* will hold a convention at Detroit, Mich., on June 22, 1897.
The *Railway Signalling Club* will meet on the second Tuesday of the months of January, March, May, September and November, in Chicago.
The *Western Railway Club* meets in Chicago on the third Tuesday of each month, at 2 p. m.
The *New York Railroad Club* meets at 12 West Thirty-first street, New York City, on the third Thursday in each month, at 8 p. m.
The *New England Railroad Club* meets at Wesleyan Hall, Bromfield street, Boston, Mass., on the second Tuesday of each month.
The *Central Railway Club* meets at the Hotel Iroquois, Buffalo, N. Y., on the second Friday of January, March, May, September and November, at 2 p. m.
The *Southern and Southwestern Railway Club* meets at the Kimball House, Atlanta, Ga., on the third Thursday in January, April, August and November.
The *North-West Railway Club* meets on the first Tuesday after the second Monday in each month, at 8 p. m., the place of meeting alternating between the West Hotel, Minneapolis, and the Ryan Hotel, St. Paul.
The *Northwestern Track and Bridge Association* meets at the St. Paul Union Station on the Friday following the second Wednesday of March, June, September and December, at 2:30 p. m.
The *American Society of Civil Engineers* meets at the House of the Society, 127 East Twenty-third street, New York, on the first and third Wednesdays in each month, at 8 p. m.
The *Western Society of Engineers* meets in its rooms on the first Wednesday of each month, at 8 p. m., to hear reports, and for the reading and discussion of papers. The headquarters of the Society are at 1736-1738 Monadnock Block, Chicago.
The *Engineers' Club of Philadelphia* meets at the House of the Club, 1122 Girard street, Philadelphia, on the first and third Saturdays of each month, at 8 p. m., except during July and August.
The *Denver Society of Civil Engineers* meets at 3 Jacobson Block, Denver, Col., on the second Tuesday of each month except during July and August.
The *Montana Society of Civil Engineers* meets at Helena, Mont., on the third Saturday in each month, at 7:30 p. m.
The *Engineers' Club of Minneapolis* meets in the Public Library Building, Minneapolis, Minn., on the first Thursday in each month.
The *Canadian Society of Civil Engineers* meets at its rooms, 112 Mansfield street, Montreal, P. Q., every alternate Thursday, at 8 p. m.
The *Civil Engineers' Club of Cleveland* meets in the Case Library Building, Cleveland, O., on the second Tuesday in each month, at 8 p. m. Semi-monthly meetings are held on the fourth Tuesday of each month.
The *Engineers' Club of Cincinnati* meets at the rooms of the Literary Club, No. 25 East Eighth street, Cincinnati, O., on the third Thursday in each month, at 7:30 p. m. Address P. O. Box 333.
The *Engineers and Architects' Club of Louisville* meets in the Norton Building, Fourth avenue and Jefferson street, on the second Thursday each month at 8 p. m.
The *Western Foundrymen's Association* meets in the Great Northern Hotel, Chicago, on the third Wednesday of each month. S. T. Johnston, Monadnock Block, Chicago, is secretary.
The *Engineers' Club of Columbus*, (O.), meets at 12½ North High street, on the first and third Saturdays from September to June.

The *Engineers' and Architects' Association of Southern California* meets each third Wednesday of the month in the Hall of the Chamber of Commerce, Los Angeles, Cal.
The *Engineers' Society of Western New York* holds regular meetings the first Monday in each month, except in the months of July and August, at the Buffalo Library Building.

The *Civil Engineers' Society of St. Paul* meets on the first Monday of each month, except June, July, August and September.

The *Engineers' Society of Western New York* meets on the first Monday of each month at the Society's rooms in the Buffalo Library.

The *Boston Society of Civil Engineers* meets at 715 Tremont Temple, Boston, on the third Wednesday in each month, at 7:30 p. m.

The *Engineers' Club of St. Louis* meets in the Missouri Historical Society Building, corner Sixteenth street and Lucas place, St. Louis, on the first and third Wednesdays in each month.

The *Engineering Association of the South* meets on the second Thursday in each month, at 8 p. m. The Association headquarters are at The Cumberland Publishing House, Nashville, Tenn.

The *Engineers' Society of Western Pennsylvania* meets at 410 Penn avenue, Pittsburgh, Pa., on the third Tuesday in each month, at 7:30 p. m.

The *Technical Society of the Pacific Coast* meets at its rooms in the Academy of Sciences Building, 819 Market street, San Francisco, Cal., on the first Friday in each month, at 8 p. m.

The *Association of Engineers of Virginia* holds its formal meetings on the third Wednesday of each month from September to May, inclusive, at 710 Terry Building Roanoke, at 8 p. m.

Western Society of Engineers.

Emil Swensson was elected President at the last annual meeting, not Harry J. Lewis, as stated in our last issue.

Ohio Institute of Mining Engineers.

The Ohio Institute of Mining Engineers held its annual meeting at Columbus, O., Jan. 20, 21 and 22. A valuable programme was presented and a large number of members were present.

Engineers' Society of Western New York.

At the regular meeting of the club, held Feb. 1, the topic, "The Electric Motor in Factories vs. the Steam Engine," was discussed. No definite conclusion as to cost was arrived at. Topic No. 2, "Should the Engineer be Required by Law to Qualify for Practice?" was postponed.

Chicago Electrical Association.

The Chicago Electrical Association met Jan. 29, at Room 1737 Monadnock Block, Chicago. A paper entitled "New Uses for Electricity in Architecture," was read by Mr. Chas. G. Armstrong. Mr. Thomas G. Grier presented a discussion of the paper. Various topics were discussed by Mr. C. Wiler.

Ohio Society of Surveyors and Civil Engineers.

The Ohio Society of Surveyors and Civil Engineers held its eighteenth annual meeting at Columbus, O., Jan. 18, 19 and 20. Papers were read covering a wide range of subjects of interest to engineers. These, together with the discussions, will appear in the printed report. There was a large attendance of old members and a number of new members were elected. It was decided to hold the next annual meeting at Columbus, O.

Canadian Society of Civil Engineers.

At the ordinary meeting Thursday, Jan. 28, abstracts of the following papers were read by members of the committee: "Water Power, Its Generation and Transmission"; "Water Power of Caratunk Falls, Kennebec River, Maine"; "Transverse Strength of Beams as a Direct Function of the Tensile and Compressive Strength of the Material"; "The Underpinning of Heavy Buildings"; "Methods and Results of Stadia Surveying"; "The Liverpool Water-Works."

Nebraska Engineering Society.

On Jan. 7 the Nebraska Engineering Society was organized with the following officers: President, A. J. Grover, Omaha; Vice-President, A. C. Koenig, Grand Island; Secretary and Treasurer, A. Dobson, Lincoln; Executive Committee, A. M. Munn, Nebraska City; R. H. Owens and J. P. Walton, Lincoln. The constitution and by-laws was adopted and 20 names were enrolled as charter members. The next meeting will be held at Grand Rapids, Neb., on May 13 and 14, 1897.

Technical Club.

At the annual meeting of the Technical Club, Chicago, held Jan. 19, the following officers were elected for the ensuing year: President, Mr. R. W. Hunt; First Vice-President, Mr. E. C. Shankland; Second Vice-President, Mr. Chas. E. Billin; Treasurer, Mr. H. F. J. Porter. Directors elected to serve until 1900: Mr. H. N. Elmer, Mr. H. B. Herr, Mr. Jessie Lowe and Mr. C. T. Quincey. The Technical Club is a social organization, formed about a year ago, composed of engineers, railroad officials and supply men and has now a membership of over 300. The club occupies very pleasant quarters on Clark street, with a large assembly room in which the future meetings of the Western Society of Engineers will be held.

Society of Naval Architects.

Under date of Dec. 21, 1896, the President of the Institution of Naval Architects, 5 Adelphi terrace, London, W. C., invited the Society of Naval Architects and Marine Engineers to visit England toward the commencement of next July, to attend an International Congress of Naval Architects and Marine Engineers, in London, under the honorary Presidency of His Royal Highness the Prince of Wales, to celebrate the sixtieth year of the reign of Her Majesty Queen Victoria. By direction of the Council, given at a special meeting held on the 21st instant, the President has accepted this invitation for the society. Members who propose to attend the Congress are requested to notify the secretary at their earliest convenience. The Secretary is Mr. Francois T. Bowles, 12 West Thirty-first street, New York.

American Society of Heating and Ventilating Engineers.

The third annual meeting of the American Society of Heating and Ventilating Engineers was called to order by President Carpenter, on Tuesday morning, Jan. 26, in the rooms of the A. S. M. E., New York, after which he announced the death of Secretary L. H. Hart, which occurred in Brooklyn, Monday afternoon, Jan. 25. The following papers were presented at the meeting and discussed at some length: "Methods of Proportioning, Di-

rect Radiation," by Prof. R. C. Carpenter; "Separation of Oil and Grease," by W. J. Baldwin; "The Arrangement of Mains in Hot-water Heating Apparatus," by W. M. Mackay; "Determining the Volume of Air Passing Through Registers," by Prof. J. H. Kinealy; "The Circulation of Steam with Heating Apparatus at or Below the Atmospheric Pressure," by R. P. Bolton.

The following officers were elected for the ensuing year: President, William M. Mackay; First Vice-President, H. D. Crane; Second Vice-President, Henry Adams; Third Vice-President, A. E. Kenrick; Treasurer, E. A. Goodrich; Managers, W. D. Hadaway, S. A. Jellett, R. C. Carpenter, E. P. Bates, W. F. Wolfe; Council, John A. Fish, A. A. Cryer, W. F. McMannis, B. F. Stangland, James Mackay.

National Association of Manufacturers.

A largely attended meeting of the National Association of Manufacturers was held at Philadelphia last week. The officers elected were: President, Mr. Thomas C. Search, of Philadelphia; Secretary, Mr. E. P. Wilson, of Cincinnati; Treasurer, Mr. Robert Laidlaw, of Cincinnati. These were all re-elections. It was decided to hold the next annual meeting in New York City.

The question of tariff received a great deal of attention and resolutions were adopted expressing the sentiment of the association as that the tariff should be revised; that duties be made protective; that they be made specific, or mixed specific and ad valorem and that the theory of reciprocity be carried out in our policy toward other nations.

It was voted to present resolutions to the President and Congress, suggesting reforms of the consular service. The reforms suggested are to have the consuls appointed under the civil service rules; that consuls be American citizens, with reasonable salaries and no fees, and that the government should own consular buildings in the chief foreign trade centers suitable for proper and dignified headquarters for our commercial representatives.

Great interest was shown in the matter of promoting foreign trade. A paper by Mr. Schieren, of Brooklyn, explained at length the methods of the Germans in promoting foreign trade, and Mr. F. P. Smith, of New Jersey, spoke of the success with which he had cultivated trade in the foreign markets for machinery.

A vague and general resolution was adopted with regard to the protection of American shipping.

A great dinner was held at the Bourse, at which it is said 600 guests were present. Mr. M. E. Ingalls spoke on "Our Business Future," and expressed the idea that we must expect a slow return of prosperity, but that it is coming. We are going now through a period of liquidation, but business is improving. What we want now to secure prosperity is a tariff which shall give reasonable protection and a monetary standard equal to that of any nation in the world and then to apply the doctrine of reciprocity. We want also better facilities for exchange with South American countries. If this association has one title of the public spirit shown by that branch of it which is in his own city (Cincinnati) "there is nothing it cannot do; it can conquer the world."

Mr. Warner Miller spoke, as a matter of course, on the Nicaragua Canal. He expressed his willingness to lose every dollar he had put into that enterprise rather than to have it go to a foreign government. He said that "infamous influences" had prevented action by our government. He said also that he might be a failure in New York politics but he "thanked God" that he had given his best labors to carry forward the greatest enterprise on the face of the earth. We regret that the report of his speech does not make it clear who was meant by "he."

PERSONAL.

—Mr. J. W. Ravlin has been appointed Superintendent of Transportation of the Texas Central Railroad.

—Mr. R. F. Reaver has been appointed Assistant General Passenger Agent of the Philadelphia & Reading.

—Mr. Fred A. Helbig has been appointed Auditor of the Gulf, Beaumont & Kansas City, with office at Beaumont, Texas.

—Mr. I. D. Condit, who was one of the founders of the Morris & Essex Railroad, died at his home in Milburn, N. J., on Jan. 29.

—Mr. W. N. Culp, General Agent of the Freight and Coal Department of the Louisville & Nashville, died in Mobile, Ala., on Jan. 31.

—Mr. John S. Matson, Division Trainmaster of the Erie, has been appointed Master of Transportation of the Pittsburg, Bessemer & Lake Erie.

—Mr. R. B. Fowler has been appointed Superintendent of the New Orleans Division of the New Orleans & Western, under General Manager W. C. Dotterer, at New Orleans.

—Mr. Gustavus E. Zippel, General Baggage Agent of the Delaware, Lackawanna & Western, has been elected President of the American Association of General Baggage Agents.

—Mr. Paul Morton, Third Vice-President of the Atchison system, sails for Europe on Saturday next, to join his family in Switzerland. He expects to be absent about two months.

—Mr. H. Horton, of Horton, Kan., has been appointed Superintendent of Machinery of the Chicago & Alton, to succeed Jacob Johann, resigned. Mr. Horton has been connected with the Rock Island.

—Mr. Charles Gisner, who has been for 45 years Station Agent for the New York Central & Hudson River Railroad, at Dobb's Ferry, N. Y., has resigned. He will be succeeded by J. C. Howell.

—Mr. John W. Hill, consulting engineer, is at present associated with the Cincinnati, Hamilton & Dayton to advise on the practicability of the use of compressed air as a motive power for the proposed inter-urban service of the road.

—Mr. Martin A. Knapp, of Syracuse, N. Y., has been nominated by President Cleveland for re-appointment as an Interstate Commerce Commissioner. Mr. Knapp was first appointed a Commissioner by President Harrison in 1891.

—Mr. J. W. Barbee, General Live Stock Agent of the St. Louis Southwestern and formerly Live Stock Agent of the Missouri, Kansas & Texas, died on Jan. 23 in St. Louis. Mr. Barbee had been in railroad service about 20 years.

—Mr. Henry Smith died on Jan. 28, at the home of his son, Charles A. Smith, in Plainfield, N. J. Mr. Smith

was for 21 years Treasurer of the Panama Railroad Co., resigning in 1879.

—The South Dakota Board of Railroad Commissioners now consists of the following gentlemen: W. H. Tompkins, Chairman; W. T. LaFollette and Alexander Kirkpatrick. The Secretary is H. W. Sawyer, and the office is at Mitchell.

—Mr. W. B. Kilpatrick has been appointed Private Secretary to Third Vice-President and General Manager, F. S. Gannon, of the Southern. Mr. Kilpatrick held the same position with Mr. Gannon when he was connected with the Baltimore & Ohio.

—Mr. George Heywood died at his home in Concord, Mass., on Jan. 31. Mr. Heywood had been a director of the Fitchburg Railroad since 1886. Two years ago he was sent to Europe as a delegate to the International Railway Congress. Mr. Heywood was 70 years old.

—Mr. George T. Nicholson, who lately resigned from the Atchison, Topeka & Santa Fe to become General Passenger Agent of the Southern & San Francisco, has received a handsome gold watch, chain and jeweled charm from his passenger associates on the Atchison.

—Mr. A. T. Dice, for the last few years Superintendent of the Atlantic City Railroad, and who was lately promoted to a place on the main line of the Reading, has been again promoted and now is Superintendent of the Shamokin Division, with headquarters at Shamokin, Pa.

—Mr. James Howell, ex-Mayor of Brooklyn, died at his home in Brooklyn, on Jan. 27. After serving for two terms as Mayor of Brooklyn, Mr. Howell was appointed a trustee of the Brooklyn Bridge. In 1885 he was elected President of the Bridge Trustees, and with the exception of one term, he held that office until the time of his death.

—Mr. William A. Harris, recently elected United States Senator from Kansas, served three years as civil engineer during the construction of the Union Pacific. He was also connected with the Nicaragua and other international ship canal surveys, and was for four years in the Argentine Confederation, South America, on a surveying trip.

—Mr. Thomas H. Canfield died at his home in Park Lane, Minn., on Jan. 20. Mr. Canfield was one of the builders of the Rutland & Washington and of the Ogdensburg roads. He also took part in building the Northern Pacific, and was a member of the syndicate for the construction of that road and one of the directors, which position he resigned in 1873. During the war Mr. Canfield was Assistant Manager, under Col. T. H. Scott, of the railroad lines from the North and East.

—Colonel C. M. Vance, General Agent of the St. Paul & Duluth, at Duluth, Minn., died at his home in that city on Jan. 27. Colonel Vance was made General Agent of the company seven years ago, and previous to that time held the office of Local Agent at Duluth for 13 years. Before going to the St. Paul & Duluth he was connected with the St. Paul & Pacific. In his capacity as General Agent of the former road at Duluth he had charge of the road's terminals in that place and its extensive boat docks, besides performing the usual duties of the general agency.

—Col. John M. Wilson was nominated by President Cleveland on Feb. 1 as Chief of Engineers of the Army, with the rank of Brigadier-General. Colonel Wilson graduated from West Point on July 1, 1860, and was actively engaged throughout the Civil War. Since the war he has been engaged in important engineering work in various parts of the country. He was made Colonel of Engineers in March, 1893, and in the ordinary course of affairs will be retired in 1901. Colonel Wilson was the second ranking officer in the Corps of Engineers, his senior being Col. Henry M. Roberts. An order was issued from the War Department on Feb. 1, placing General W. P. Craighill, Chief of Engineers, on the retired list in compliance with his request.

—Capt. James A. McMillan, Chief Clerk to Vice-President & General Manager Quinlan, of the Houston & Texas Central, died at his home in Houston, Tex., on Jan. 23. Captain McMillan had been with the Houston & Texas Central for the last 20 years in various capacities. He came to Houston in 1876, entering the service as Clerk for the Superintendent of the First Division. Captain McMillan was born in Augusta, Ga., in 1832. He began railroad life with the Pennsylvania Central Railroad, when that line was building, and was one of the party who located and surveyed the famous horse-shoe curve. He left the Pennsylvania, returning to Georgia, and later came again to Pennsylvania, re-entering the employ of the railroad company.

—Governor Leedy, of Kansas, has constituted the new Railroad Commission by the appointment of William M. Campbell, of Antrim, for one year; William P. Dillard, of Fort Scott, for two years, and Lorenzo D. Lewelling, of Wichita, for three years. The last named is the well-known ex-Governor; he will not succeed the present incumbent, Mr. Lowe, until April 4. The other two new Commissioners take their places at once. The Secretary of the new Board is R. W. Turner. The Topeka Capital says that Mr. Dillard is the only one of the three Commissioners who is in any degree qualified for such a place. Mr. Campbell is said to belong to the "old fashioned wild-eyed wing of populism," and disposed to follow wherever Lewelling leads, which, says the Capital, is likely to be as far wrong as possible.

—Mr. Frank Thomson, who, in consequence of the death of Mr. Roberts, becomes President of the Pennsylvania Railroad, has been First Vice-President for nine years. Like all of the prominent officers of the Pennsylvania, he has spent practically the whole of his active life in the service of the company. He was born at Chambersburg, Pa., July 5, 1841, and began service in the shops at Altoona in 1858. From the opening of the war until June, 1864, he was Assistant to Colonel Thomas A. Scott, in the management of the military railroad service for the government; for the next nine years he was Superintendent of the Western Division of the Philadelphia & Erie. He then became Superintendent of Motive Power of the Pennsylvania, from which place he was promoted a year afterward (July, 1874) to the General Managership. In 1882 he was made Second Vice-President. During his service for the government Mr. Thomson had charge of important construction work, both in the roadway and the mechanical departments, at Alexandria, Chattanooga and Nashville. The value and importance of his service on the Pennsylvania since 1874 could be recounted only by going over the history of the operating department of the road for the years during which he was at the head of it, and to anyone who does not know of the prominence of the Pennsylvania among American railroads this history may be partially indicated by saying that the management, always composed of strong men, has been foremost in progress in every department. The fact that in recent years other prominent roads, formerly followers, have (often largely by the

infusion of Pennsylvania blood) brought their scientific and professional standards up to the Pennsylvania level, makes the eminence of the latter less noticeable, but does not detract from the credit due to it.

ELECTIONS AND APPOINTMENTS.

Alabama Great Southern.—W. C. Stephens has been appointed representative of the freight department of the road, with headquarters in Chattanooga. Mr. Stephens' title has not been announced.

Atlanta, Knoxville & Northern.—Following the reorganization, these directors have been elected: Henry F. McHarg, Gen. Horace Porter and Walter Ferguson, of New York; E. C. Spalding, A. W. Smith and Joseph McWilliams, of Atlanta, and B. A. Denmark, of Savannah. The directors have elected the following officers: Henry K. McHarg, President; E. C. Spalding, Vice-President; Joseph McWilliams, General Manager; H. W. Oliver, Secretary and Treasurer; Alex. Smith and Victor Smith, General Counselors.

Atlantic Coast Line.—R. E. Smith has been appointed Superintendent of Motive Power, with office at Wilmington, N. C. Master Mechanics and Master Car Builders will report to him.

Baltimore & Ohio Southwestern.—John R. Rowland has been appointed Freight Claim Agent, to succeed R. M. Frazer, resigned. The appointment took effect on Feb. 1.

Chicago, Rock Island & Pacific.—J. W. Fitz Gibbon has been appointed Assistant Superintendent of Motive Power and Equipment, in charge of Locomotive and Car Departments, of the lines west of the Missouri River, with headquarters at Horton, Kan., succeeding H. Monkhouse, resigned. Resignation and appointment took effect Feb. 1.

Cumberland Valley & Martinsburg.—At the stockholders' annual meeting held in Martinsburg, W. Va., on Jan. 26, the following directors were elected for the ensuing year: John Stewart, J. F. Boyd, Thomas B. Kennedy, Holmes Conrad, E. Boyd Faulker, M. C. Kennedy, A. J. Thomas, H. H. Baker, Thomas J. Cooper, George W. Bowers, James B. Russell, William T. Stewart and R. W. Stone. At a subsequent meeting of the board these officers were chosen: M. C. Kennedy, President; M. T. Ingles, Secretary; James B. Russell, Treasurer.

Delaware River.—At the annual meeting of the stockholders, held in Camden, N. J., on Feb. 1, the following directors were elected: William J. Sewell, William Bettle, A. O. Dayton, George Wood, Samuel Rea, John P. Green and W. H. Barnes. The directors then elected Samuel Rea President, and F. W. Schwarz Secretary.

Denison & Northern.—Officers were recently elected as follows: Newton B. Childs, Kansas City, President; William J. Scott, Kansas City, First Vice-President and General Manager; P. E. Fairbanks, Denison, Second Vice-President and Secretary; C. S. Cobb, Denison, Treasurer; J. A. Atkinson, Chicago, Assistant Treasurer.

Erie & Eastern.—The directors are: J. R. Brotherton, Christian Kessler, Jacob Warfel, Lester Zuck and Thomas Paskett, of Erie, and W. H. West and D. W. Hunt, of Waterford, Pa.

Fort Wayne & Jackson.—At the stockholders' annual meeting held in Jackson, Mich., on Jan. 23, the following directors were elected: Samuel Sloan, R. G. Roiston, W. D. Searls, Samuel Sloan, Jr., B. B. Sloan, W. H. Leupp and Henry Beste, of New York; J. M. Root and D. Merriman, of Jackson, and Henry B. Joy, of Detroit.

Huntingdon & Broad Top Mountain.—At the annual meeting of stockholders, held in Philadelphia on Feb. 2, officers and directors were elected as follows: President, Spencer M. Janney; Secretary and Treasurer, J. M. Donaldson. Directors: James Long, James Whitaker, T. R. Patton, Jacob Naylor, William Bault, Samuel Bancroft, George H. Colket, Robert H. Crozer, William H. Shallcross, Lewis A. Riley, Harrison K. Caner and Charles S. Farnum.

Jamestown & Franklin.—At the annual meeting of the stockholders held recently at Stoneboro, Pa., the following officers and directors were elected: President, George H. McIntire, Stoneboro; Secretary, R. P. Cann, Stoneboro; Directors, C. G. Getzendanner, P. P. Wright, J. R. Reed, S. R. Mason, W. H. McIntire and R. P. Cann.

Little Miami.—At the annual meeting of stockholders, held in Cincinnati, on Jan. 26, four directors were elected, as follows: James N. Gamble and William Worthington, of Cincinnati; A. S. Frasier, of Xenia, and J. T. Brooks. The board re-elected the present officers.

Mobile & Ohio.—At a meeting on Jan. 27, the bondholders elected the following directors: J. C. Clarke, T. E. Dyons, F. H. Fay, J. S. Rogers, H. B. Plant, J. B. Mason, Adrian Iselin, Jr., G. C. Cuyler, S. Sidney Shephard, F. D. Tappen, E. L. Russell, A. H. Stevens and W. B. Duncan.

Monroe, Fort Smith & Northern.—The following Board of Directors has been elected: D. W. Pipes, R. M. Filbert, W. B. Reilly, L. D. McLain, J. P. Parker, F. P. Stubbs, Jr., J. M. Smith, J. D. Everett, Sol Meyer, E. Fudickar. Secretary & Treasurer, F. P. Stubbs, Jr.; General Manager, C. G. Woodbridge.

Newport & Sherman's Valley.—At a meeting of the Directors held at Newport, Pa., Jan. 27, these officers were elected: President, David Gring; Vice-President, D. W. Stehman; Secretary and Treasurer, C. K. Miller; Auditor, A. I. Keim.

Pennsylvania.—William U. Todd, a machinist at the Harrisburg shops, has been made Shop Foreman & Chief Car Inspector, at Millin, Pa., succeeding Harry C. Wells, resigned. George T. Baker has been appointed Chief Car Inspector at the Union Station in Harrisburg.

Perkiomen.—At a meeting of the Board of Directors on Jan. 27, Howard Boyd resigned as Secretary and Treasurer, and George Boggs as Engineer-Comptroller. The following new appointments were made: Theodore Voorhees, First Vice-President; C. E. Henderson, Second Vice-President; W. A. Church, Treasurer; W. R. Taylor, Secretary, and D. Jones, Comptroller.

Philadelphia & Reading.—A. T. Dice has been appointed Superintendent of the Shamokin Division, with headquarters at Shamokin, Pa., in place of B. F. Bertollet, resigned. G. B. Boggs has been appointed Assistant Superintendent of the Shamokin Division, with office at Catawissa. J. S. Ward has been appointed Engineer

of Maintenance of Way on the Shamokin Division, with headquarters at Williamsport. J. H. Freech has been appointed to succeed Mr. Dice, as Assistant Superintendent of the Reading Division.

Pittsburgh & Lake Erie.—The annual meeting of the stockholders was held at Pittsburgh Jan. 26. The only changes in the directorate was the retirement of Judge J. H. Reed, who was succeeded by P. C. Knox.

Pittsburgh, Bessemer & Lake Erie.—At a meeting held in Pittsburgh recently officers were elected as follows: J. H. Reed, President; J. T. Odell, Vice-President; R. H. Franks, Secretary; T. H. Given, Treasurer; J. T. Blair, General Manager; W. G. Sargeant, General Passenger Agent; W. K. Richards, General Freight Agent and D. Hum, Auditor.

Pittsburgh, McKeesport & Youghiogheny.—Officers and directors have been elected as follows: President, J. M. Schoonmaker; Vice-President, Hamilton McK. Twombly. Directors: Cornelius Vanderbilt, William K. Vanderbilt, James Tillinghast, D. W. Caldwell, James M. Bailey, P. C. Knox, Henry Hice and M. W. Watson.

Portland & Ogdensburg.—At the annual meeting of stockholders held recently in Portland, Me., the following directors were chosen: Samuel J. Anderson, Charles H. Amaden, James P. Bayter, John W. Deering, James F. Hawkes, Theodore A. Josselyn, Weston F. Milliken, Thomas P. Shaw, Elias Thomas and Edward B. Winslow. Samuel J. Anderson was elected President and John W. Deering Clerk.

Sandusky, Mansfield & Newark.—The annual meeting of the stockholders was held in Sandusky, O., on Jan. 20, and the following directors elected: John Gardner, E. G. Gardner, Norwalk; John K. Cowen, Baltimore; J. E. Newell, Chicago; Jay O. Moss, Clark Rude, A. C. Moss, Sandusky, and L. J. Tracy, Mansfield.

Southern.—The following appointments took effect on Feb. 1: William H. Taylor, Assistant General Passenger Agent, at Louisville, Ky.; J. H. Wingfield, District Passenger Agent, at Norfolk, Va.; J. C. Horton, Passenger Agent at Baltimore; C. W. Westbury, Traveling Passenger Agent at Richmond.

South Side Elevated (Chicago).—At a meeting held in Chicago on Jan. 28, directors were elected as follows: Byron L. Smith, William B. Walker, A. O. Slaughter, Joseph Leiter, Lyman J. Gage, George E. James, Chauncey J. Blair, E. L. Lobdell, T. J. Lefens, E. Buckingham, William Fleming and Leslie Carter. The directors then met and elected the following officers: President, Leslie Carter; Vice-President, William Fleming; Secretary, John H. Glade.

Terre Haute & Mississippi River.—At a recent meeting of the stockholders Directors were elected, as follows: H. Hulman, W. R. McKeen, E. P. Fairbanks, H. C. Pugh, R. Geddes, W. P. Jams and Willard Kidder.

Union.—At the stockholders' annual meeting, held in Baltimore, on Jan. 27, Directors were elected as follows: B. F. Newcomer, Harry Walters, Henry James, Francis M. Darby and Bernard Carter. The directors then elected the following officers: President, B. F. Newcomer; Vice-President, Frank Thomson; Treasurer, A. W. Hendrix; Secretary & Auditor, J. P. Kerr.

West Shore.—The following changes took effect Feb. 1: Frank W. Everett, Train Master, transferred to West End, with headquarters at East Buffalo; William K. McCoy, appointed Train Master, at East End, with headquarters at Syracuse; William F. Ballou appointed Chief Train Dispatcher.

Wheeling & Lake Erie.—A. G. Blair and George E. Pomeroy, of Toledo, O., and J. H. Dowland, of New York, have been elected Directors. The office of General Passenger Agent having been made vacant by the resignation of James M. Hall, the offices of General Freight Agent and General Passenger Agent have been consolidated, and R. J. Booth will serve in the combined position.

Wisconsin Central.—C. E. Wilson has been appointed Assistant General Freight Agent of the company, with headquarters at Milwaukee. The appointment was effective Feb. 1. O. P. Gothlin has been appointed Commercial Agent at Milwaukee.

RAILROAD CONSTRUCTION. Incorporations, Surveys, Etc.

Baltimore & Ohio.—Reports from Finleyville, Pa., state that double tracking has been completed between Nottingham and Anderson, in Allegheny County, Pa., and that an extra track will soon be laid opposite the Nottingham mine, thus completing the double track from Finleyville to Anderson.

Benton Harbor & Southeastern.—This road has been completed from Benton Harbor, Mich., to a point near Berrien Springs. The construction of the line from Benton Harbor to Nappanee is being rapidly pushed, and is expected to be opened for traffic by April 1. Eastern capitalists are building the road.

Bridgton & Saco River.—At a meeting of the stockholders held at Bridgton, Me., the action of the directors in voting to extend the road to Harrison, a distance of five miles, was formally ratified.

Canadian Pacific.—C. E. Perry, with a corps of surveyors, has established a camp at the mouth of Duck River, Man., near where the Kootenay River empties into Kootenay Lake. The party is surveying for a road from Duck Creek to a point opposite Balfour. This is the second section selected on the line of the proposed Crow's Nest Pass road, the first section being along the south shore of the outlet from Nelson to a point opposite Balfour. The third section will be from Duck Creek to the divide which separates East and West Kootenay.

Cheat River.—The preliminary survey for this road has been begun. It will extend from Rowlesburg, W. Va., a station on the Baltimore & Ohio, down the Cheat River to Fairchance, Pa. Julius K. Monroe, who conducted the survey of the disputed boundary line between West Virginia and Maryland, has charge of the two surveying corps. It is expected that construction work will begin within a short time.

Columbia & Kootenay.—Reports from Revelstoke, B. C., state that the clearing of the right of way has commenced on the Slokan extension of the road. This branch leaves the main line near the mouth of the Slokan River and runs north 32 miles to the south end of Slokan Lake. Superintendent Marpole states that the contract for construction will be let within a few days. It is not likely that actual work will be commenced upon the same before spring.

Denison & Northern.—It is reported that this road, which has been for some months in the hands of Receivers, may soon revert to the stockholders' management, and be built as per their charter. A meeting was recently held in Denison, Tex., and officers were elected, whose names are given in another column. A portion of the line has been built, and it is proposed, when completed, to pass through coal and iron lands, and reach valuable asphaltum mines.

East Tennessee & Western North Carolina.—Work has been begun on a 14-mile extension of this road, from Cranberry to Linville, N. C. The work is being done by Copening Bros., of Chicago, and a force of 250 men is employed. The route is through a valuable white pine section, which it is expected to develop.

Erie & Eastern.—Reports from Erie, Pa., state that a representative of the Standard Oil Company has offered to build the road and take one half of the bonds issued by the company in pay for the construction. The road is projected for the purpose of getting closer to the oil and lumber country, and to obtain a direct connection with the Erie road. It will extend from Erie, Pa., south to Mill Village, about 20 miles. A list of the directors is given in another column.

Galveston & Great Northern.—A bill, asking for right of way for this projected line through Oklahoma and Indian Territories, is now before Congress. The road was incorporated in 1894, charters being filed in Kansas in March and in Texas in December of that year. The route as proposed is from the Missouri River at Niobrara, Neb., through Nebraska, Kansas, Oklahoma, the coalfields of Indian Territory, and Texas to Denison. Certificates, exchangeable for bonds when issued, were put on the market. Edward Roemer, a civil engineer of New York City, is President of the company. Mr. Roemer has been named as an incorporator of several other companies organized in Kansas during recent years.

Great Northern.—It would seem that the company has now practically decided to extend its line across the northern part of Minnesota from Fosston to Duluth. A surveying party has been in the field for some time past, and has run the line from Fosston nearly due east; the survey is being thoroughly made, and the indications are that the new route will be pushed through at an early date. The *Timberman* states that the surveyors have taken the following route: Going east, the survey first crosses the Mississippi River in township 145-35. It then crosses the narrows of Cass Lake, south of the main Cass Lake; thence south of Lake Winnibigoshish; then crosses the Mississippi again near Ball Club Lake, and the Duluth & Winnipeg Railroad near Deer River; at last accounts the surveyors were in camp on the north shore of Bass Lake, about 15 miles northwest of Grand Rapids. Aside from its general railway features, which indicate a new competition in the grain business by means of this short line connection, it will open up an almost untouched timber section, and will both serve as a rail outlet for logs and invite saw mill erection. It is understood that there have never been any logs taken out of the Mississippi River from above Lake Winnibigoshish except in one instance, four years ago.

Hutchinson & Southern.—Rails are now being laid on the extension from Cameron, Kan., to Medford, O. T. H. L. Jackson, Chief Engineer of the road, is in Missouri superintending the shipment of more rails.

McCloud River.—This company has filed articles of incorporation in California to build a standard gage road from a junction with the Southern Pacific at Upton, near Sisson, Cal., to Fall River, in Shasta County, near the junction of the Pitt and Fall rivers, a distance of about 60 miles. The capital stock will be \$1,200,000. It is said that \$266,000 has been actually subscribed, and that \$6,600 has been paid to the Treasurer of the company. The incorporators are William E. Brown, William W. Van Arsdale, Daniel W. Earl, J. D. Brown and George W. Scott. A provision is included in the articles empowering the company to build electric lines as feeders.

Memphis, Little Rock & Pacific.—A charter was granted to this company on Jan. 22. The company has been incorporated as the result of a movement to extend the Little Rock & Memphis from Little Rock to Wister Junction, I. T., where connection will be made with the Choctaw, Oklahoma & Gulf. This will give a line between Memphis and Wister Junction 293 miles in length. Branch lines will be run to Hot Springs and Fort Smith. The incorporators are: H. L. Brinkley, D. T. Porter, W. B. Mallory, John Overton, Jr., T. B. Turley and Cotton Greene, all of Memphis.

Mexican Central.—The directors are reported to have decided to construct a direct road from Tampico to the City of Mexico. The company has held a concession from the Mexican government for several years for the proposed road.

Mexican Southeastern.—The final survey for this road, which is to be built from San Geronimo, on the National Tehuantepec road, to Tapachula, on the Guatemalan frontier, has been completed by Chief Engineer Stuart and party, and it is hoped that arrangements with the government for the commencement of the work of construction will be perfected in the City of Mexico in a few days. J. D. McClellan, of Cleveland, O., is General Manager and principal stockholder of the company. He is now on his way to Mexico to take charge of the work of construction. The company intends continuing the line through Central America after Tapachula is reached.

Mobile & Ohio.—This company has had considerable trouble in obtaining terminal facilities in Montgomery, Ala., for its extension from Columbus, Miss., but local papers state that right of way has now been secured through that city. It is expected that work will be begun on the line shortly. The proposed extension is to be 168 miles long, with branches of 15 miles to the Warrior coalfield, and of 12 miles to the Blocton coalfield, in northern Alabama. Construction will be carried on under the personal supervision of the chief engineer of the road. The extension will be known as the Montgomery, Tuscaloosa & Memphis.

Monroe, Fort Smith & Northern.—A company has been formed in Monroe, La., under the above name, to build a road from Monroe to Junction City, La., where it will meet the Arkansas Southern. The line, which will be about 50 miles long, will pass through Farmersville, in Union Parish. The capital stock will be \$200,000, divided into shares of \$100. It is said that right of way has already been obtained through Union Parish, and that work on the line will be begun shortly. A list of the Board of Directors is given in another column.

Moore & Western.—A bill was passed last week in North Carolina, chartering this road, which is intended to give the city of Concord, N. C., a cotton manufacturing center, a railroad outlet in competition with the

Southern. The proposed route is through the eastern portion of Cabarrus County, through the counties of Stanly and Montgomery and the southerly portion of Richmond County to Aberdeen, Moore County, which is now the junction of the Aberdeen & West End and the Raleigh & Augusta. The total length will be about 100 miles. The terms of the charter require that the road shall be completed and in regular operation within two years.

New Roads.—Articles of incorporation has been filed by a company which proposes building a road from Covington, Tenn., to Fulton, Tenn., on the Mississippi River, a distance of 18 miles. The road at Covington will touch the Illinois Central.

Pennsylvania.—Work is being pushed on the tunnel in the vicinity of Radebaugh and Greensburg, Pa., on the Pittsburgh Division. The headings met some weeks ago. A long fill east of the tunnel is nearly completed and tracklaying will be begun in April. The rock cut at the point where the new line intersects the present main track is being widened so as to eliminate the curve and give a straight line from Greensburg down to Grapeville.

Philadelphia, Wilmington & Baltimore.—The Central division has obtained a strip of ground along the south side of the track, extending from a short distance west of the high bridge, near Media, Pa., to a point near Elwyn. It was purchased from the Clothier estate, and will give all the necessary ground to extend the double track from the present terminus to Elwyn Station.

Pittsburgh, Connellsville & Wheeling.—The residents of Greene County, Pa., and of Marshall County W. Va., propose to issue bonds to help build this road. A citizen of Moundsville, W. Va., has notified the President of the company that for 20 out of the 22 miles which will pass through Marshall County, free right of way will be given, and in addition the county will contribute \$100,000 toward the road. It is thought that Greene County shippers and buyers are ready to advocate a similar proposition from their county. The road is proposed from a point near Millsboro, on the Monongahela River, up Ten Mile Creek, via Waynesburg, and down Wheeling Creek to Wheeling, a total of about 50 miles.

Portland & Rumford Falls.—The grading of the Otis Falls Branch from Canton, Me., to Otis Falls has been practically completed. The work on the piers and abutments of the bridge over the Androscoggin, near Otis Falls, is being pushed forward rapidly. Rails are laid to the river at the bridge. Caldwell & Varnum have begun ballasting the road from Riley's to Otis Falls.

Silverton Northern.—The company has recently filed with the Secretary of State a certificate stating that work had been commenced and was being prosecuted diligently and that 20 per cent. of its capital stock had been expended within two years. The company was incorporated Nov. 4, 1895, by Otto Mears, Fred Walsen, Alexander Anderson, Jerome B. Frank and Moses Silverman, with a capital stock of \$150,000, and this, according to a certificate also filed, is paid up.

Twin Lakes.—This company filed articles of incorporation with the Secretary of State of Colorado on Jan. 26. The road is proposed to open up a considerable mining region. Construction is expected to be begun in the spring. Messrs. R. G. Parvin and J. V. Dexter, who are among the principal promoters, state that there will be about 20 miles of track. One line is proposed to run northwest from Granite, Col., a station on the Denver & Rio Grande, taking a course south of and around the larger lake, terminating at the town of Twin Lakes. The other track will follow the northern shore of the large lake. The incorporators are John Pierce, H. R. Wolcott, Dennis Sullivan, George W. Cooke, Clinton Reed, R. G. Parvin and J. V. Dexter. The capital stock is \$250,000.

Wisconsin & Michigan.—In regard to the proposed extension to Iron Mountain, Mich., President Fisher states that it will only be necessary to build seven miles north from Faithorn Junction, Mich., the present northern terminus of the road, to reach Norway, and seven miles further to tap Iron Mountain. Florence is a few miles beyond. The extension will be made this year if conditions warrant it.

Electric Railroad Construction.

Anderson, S. C.—We have been informed that Philadelphia capitalists have been granted a charter for the construction of an electric road from Aiken, S. C., to Augusta, Ga.

Baltimore, Md.—Additional rights of way have been secured by the Baltimore, Middle River & Sparrows' Point Railway for the extension to Sparrows' Point. Mr. James Young has resigned the presidency of the company, and the following officers have been elected: President, Daniel Crook; Vice-President, Jacob W. Hook; Secretary and Treasurer, G. H. Duvall; Chief Engineer, Col. Charles B. McLean.

Bangor, Me.—A bill has been introduced into the Maine Legislature granting to the Penobscot Central Railway the right to build an electric road in some of the principal streets in Bangor. It is stated that the merchants and property owners strongly oppose the measure.

Barnstable, Mass.—The Barnstable County Street Railway Co. has been incorporated with A. D. Makepeace, of West Barnstable, as President, and E. C. Perkins, of Boston, Treasurer. Among the Directors are S. L. Minot, W. B. Bacon and William S. Hixon.

Boston.—Last week the West End Street Railroad Co. placed contracts amounting to \$320,000; \$175,000 of this amount is for 5,500 tons of 85-lb. rail (60 ft long), the contract for which was secured by Johnson & Co., of Lorain, O.; \$125,000 represented miscellaneous steel work, as frogs and switches. Johnson & Co. and the Pennsylvania Steel Co. are understood to be among the bidders for this special work. The balance, \$20,000, was for 600 tons of 85-lb. rail, including joints, fastenings, etc., for the equipment of 4½ miles of the subway; the contract for this work was secured by the Pennsylvania Steel Co.

Braddock, Pa.—On Feb. 2, a charter was granted at Harrisburg to the Braddock & Duquesne Street Railway Co., with a capital of \$15,000, to build a 2½-mile line from Braddock across the Monongahela River to Duquesne. The Directors include L. G. Woods, F. M. Ross and Jno. F. Baxten, of Pittsburgh.

Chicago.—The General Electric Railway ordinance for a franchise on Wabash avenue and other streets on

the South Side passed by a two-thirds vote on Jan. 26. The ordinance is for 20 years, and provides that the road shall be a cable or electric road. The following rates of compensation for the city are provided for in the franchise: \$200 a year per mile for the last three years of the first five years; \$300 per mile for the second five years; \$400 per mile for the third five years, and \$500 per mile for the fourth five years. It is believed that the Mayor will veto the measure.

Cincinnati, O.—The Main Street Railway Co. is applying for a franchise to extend its line. It is stated that the attorney of the road will negotiate for a loan of \$500,000 to be expended in the reconstruction of the old line and for further extensions.

Clayton, Mo.—Work has been begun on the proposed boulevard along the right of way of the Clayton & Forest Park electric railroad from Forest Park to Clayton. The thoroughfare is to be 100 ft. wide, and the railroad company proposes to double-track its line and occupy the center of the right of way.

East Windsor, Mass.—A resolution has been presented to the Legislature to incorporate the East Windsor Electric Railway Co. Among the incorporators are J. H. Simonds, C. G. Harrison and S. R. Rockwell.

Florence, Ala.—The City Council has granted a franchise for a street railroad from the Union Depot to Court street to A. P. Harland and others.

Hagerstown, Md.—On Jan. 25 engineers began surveying a route for the proposed electric road which is to run from Hagerstown to Funkstown, about two miles. It is intended to use the old turnpike bridge to cross the Antietam Creek.

Lansing, Mich.—The Benton Harbor Electric Railway and Transfer Co. have been incorporated with a capital stock of \$150,000.

McKeesport, Pa.—The Select Council of McKeesport has amended the ordinance granting the McKeesport Terminal Railway Co. the right of way on Water street. The ordinance will come up for final passage at the next meeting.

Milford, Mass.—The Selectmen of Milford have asked the Milton, Holliston & Framington Street Railway Co. to extend its lines to Caryville and Medway.

North Brookfield, Mass.—The citizens of North Brookfield have voted in favor of building an electric railroad from that place to connect with the line of the Warren, Brookfield & Spencer road at East Brookfield.

Pittsburg, Pa.—The Pittsburg & Mt. Washington Electric Street Railway Co. received a charter at Harrisburg, Jan. 28. Capital stock, \$24,000; length of proposed line, four miles.

Portland, Me.—The Portland Railroad Co. is making surveys for the proposed completion of the loop to connect Ocean street, East Deering, with the tracks of the road in Portland, passing over Tukey bridge.

Santa Rosa, Cal.—Press reports state that the Santa Rosa & Sonoma County Electric Railway Co., referred to among our notes of Jan. 1, has begun to make surveys for the first section of its proposed road, between Embarcadero and Santa Rosa.

Sewickley, Pa.—The Sewickley Valley Electric Passenger Railway Co. was granted a charter at Harrisburg on Feb. 2, with a capital stock of \$15,000, to build a 2½-mile line from Sewickley to Osborne Borough via Beaver Road. The Directors are: James D. Callery, President; W. H. Keech, J. M. Tate, Jr., and others.

Titusville, Pa.—The newly chartered Titusville Electric Railway Co. will shortly apply for a franchise to operate its lines in Titusville. The route of the proposed road is to be from Pleasantville to Titusville by the Titusville and Pithole road; thence through Titusville to Hydetown back to Titusville; thence to East Titusville and back to Pleasantville, forming a circuit 15 miles in length.

Toronto, Canada.—Contractors Curran & Hussey, of Pittsburgh, have just completed 11 miles of track for the Metropolitan Street Railway Co., Toronto, Canada. The center of the line is at Richmond Hill.

GENERAL RAILROAD NEWS.

Atchison, Topeka & Santa Fe.—Judge Myers, in the District Court of Jefferson County, Kansas, decided a year or more ago that the Leavenworth, Topeka & Southwestern forfeited its right of way across a farm in said county by abandoning traffic over the road in March, 1894. The road extends from Leavenworth to Meriden Junction, Kan., 46 1/2 miles, and is now operated in connection with the Atchison, but by separate management, C. T. McLellan being Receiver under direction of the United States Court. The case has recently been heard on appeal, but no decision has yet been rendered. The abandonment complained of occurred in 1894, when the Union Pacific Receivers, who formerly ran the road, ceased doing so, and the Receiver was appointed four weeks afterward on behalf of the Leavenworth, Topeka & Southwestern bondholders.

The earnings of the Atchison, Topeka & Santa Fe for December and for six months ending Dec. 31 were:

	1896.	1895.	Inc. or Dec.
Gross earn.....	\$2,852,010	\$2,766,028	I. \$85,982
Oper exp.....	2,001,296	1,951,219	I. 50,077
Net earn.....	\$850,714	\$814,809	I. \$35,905
Taxes and rentals.....	152,309	205,011	I. 52,702
Income from oper.....	\$698,405	\$609,798	I. \$88,607
Six months:			
Gross earn.....	\$16,187,168	\$15,409,263	I. \$777,905
Oper exp.....	11,200,569	11,863,817	D. 663,278
Net earn.....	\$4,986,599	\$3,545,516	I. \$1,441,083
Taxes and rentals.....	960,330	985,343	D. 21,904
Income from oper.....	\$4,026,269	\$2,560,173	I. \$1,465,887

Atlantic & Pacific.—At a meeting of the New York Committee of the first mortgage bondholders, held Jan. 28, the action of the foreign bondholders' committee in voting to accept the arrangement whereby the Atchison purchases the first mortgage six per cent. Western Division bonds was ratified by a vote of \$16,271,000 out of a total deposit of \$18,330,000. The proposed arrangement as passed on by the foreign bondholders, was referred to in our issue of Jan. 22. The income bondholders filed a protest at the meeting, which was disregarded. The transaction has been carried into effect and the entire issue of \$16,000,000 first mortgage Atlantic & Pacific bonds have been delivered.

Baltimore & Ohio.—Baltimore holders of the 4½ per cent. bonds of the Columbus & Cincinnati Midland are forming an organization, of which Owen Daly & Co. and Middendorf, Oliver & Co. are in charge, to take legal action to secure the adjustment of their claims against the Central Ohio and the Baltimore & Ohio. The total issue of bonds amounts to \$2,000,000, of which about \$200,000 are held in Baltimore. Interest has been in default since July 1, 1896. The Central Ohio leased the Columbus & Cincinnati from Jan. 11, 1896, and assigned the lease to the Baltimore & Ohio. Philadelphia holders of the bonds have taken steps to protect their interests and may co-operate with the Baltimore movement.

The United States Court has authorized the Receivers to extend for three years at 5 per cent. a balance of \$250,000 due on the car trust loan of 1887. The loan was originally for \$2,500,000 at 4½ per cent. interest, the Mercantile Trust & Deposit Co. of Baltimore being the trustee.

Buffalo, Rochester & Pittsburgh.—The earnings for the quarter ended Dec. 31 were:

	1896.	1895.	Inc. or Dec.
Gross earn.	\$859,586	\$791,067	I. \$68,519
Oper. exp.	593,293	577,431	I. 15,862
Net earn.	\$266,293	\$213,636	I. 52,657
Other income	11,011	11,709	D. 698
Totals	\$277,304	\$225,345	I. \$51,959
Fixed charges	216,918	222,654	D. 5,736
Surplus	\$90,386	\$2,691	I. \$87,695

Canadian Pacific.—The operations for the year ended Dec. 31 were:

	1896.	1895.	Increase.
Gross earn.	\$1,031,598	\$1,911,037	\$1,710,561
Oper. expen.	12,574,016	11,464,786	1,113,930
Net earn.	\$810,582	\$748,251	\$62,631
Fixed charges	6,659,478	6,639,478	—
Surplus	\$1,148,104	\$821,473	\$326,631
4 p. c. on p'd stock	256,960	246,960	—
Surplus	\$1,191,144	\$64,513	\$326,631

Chicago & Eastern Illinois.—A mortgage in favor of the Central Trust Co. of New York, is being filed in various counties of Illinois and Indiana. It relates to the general consolidated mortgage bonds which were issued in accordance with arrangements made in connection with the purchase of the Chicago, Paducah & Memphis road. Of the amount \$8,000,000 will be used for purchasing or retiring existing bonds; \$18,000 a mile for single-track extensions and branches hereafter acquired; \$7,000 a mile for additional equipment, and \$8,000 a mile for every mile of double track hereafter acquired.

The earnings for December and six months ended Dec. 31 were:

	1896.	1895.	Inc or Dec.
December:			
Gross earn.	\$369,006	\$365,457	I. \$3,549
Oper. exp.	200,028	212,123	D. 11,095
Net earn.	\$168,978	\$153,334	I. \$15,644
Other income	23,472	27,205	D. 3,733
Total income	\$212,450	\$180,539	I. \$31,911
All charges	\$115,746	117,366	D. 1,610
Surplus	\$96,704	\$63,173	I. \$33,531
Six months:			
Gross earn.	\$2,107,716	\$2,137,673	D. \$29,957
Oper. exp.	1,988,122	1,172,166	D. 715,956
Net earn.	959,594	\$965,437	D. \$5,843
Other income	85,207	77,817	I. 7,390
Total income	\$994,801	\$1,043,254	D. \$48,453
All charges	696,382	693,515	I. 2,867
Surplus	\$298,419	\$349,739	D. \$51,320

The surplus is \$18,000 in excess of the full year's dividend on the preferred stock.

Chicago & Northwestern.—The operation of the company for the past three years, ending Dec. 31, are given in the following table:

	1896.	1895.	1894.
Mileage	5,031	5,031	5,031
Gross earn.	\$32,177,153	\$31,558,629	\$29,119,362
Oper. exp.	21,226,925	19,753,892	20,110,728
Net earn.	\$10,950,228	\$11,804,737	\$9,008,634
Interest and sinking fund.	6,624,945	6,769,606	6,954,300
Net income	\$4,325,283	\$5,035,131	\$2,054,334
Dividends	3,517,758	3,125,716	3,711,332
Surplus	\$807,525	\$1,909,505	\$1,656,998

* Deficit.

The interest charges for the last two years are given after allowing for a credit of \$244,907 for income from investments in 1895 and \$257,909 in 1896.

Chicago, Milwaukee & St. Paul.—The earnings for the month of December and for the six months ended Dec. 31 were:

	1896.	1895.	Inc. or Dec.
December:			
Gross earn.	\$2,570,773	\$2,764,632	D. \$193,859
Total exp.	1,329,870	1,527,792	D. 197,922
Net earn.	\$1,240,903	\$1,236,840	I. \$4,063
Six months:			
Gross earn.	\$16,738,283	\$18,067,722	D. \$1,329,439
Total exp.	9,953,407	10,165,127	D. 211,720
Net earn.	\$3,784,876	\$7,902,595	D. \$4,117,719

Erie.—The earnings for December were:

	1896.	1895.	Inc. or Dec.
Gross earn.	\$2,535,511	\$2,561,435	D. \$25,924
Oper. exp.	2,030,474	1,985,294	I. 45,180
Net earn.	\$505,037	\$576,141	D. \$71,104

Columbus, Hocking Valley & Athens.—Suit has been begun at Columbus by the State of Ohio against the bondsmen of the road to enforce their liability on a bond for \$100,000 given to assure the State that the road would be built within two years from May 18, 1894. The company was organized in April, 1894, to lease the bank of the Hocking Valley & Athens Canal, extending from Carroll to Nelsonville, 42 miles, and to use it as a roadbed. After a settlement of the matter, the right of the State to make such a lease being questioned, the company agreed to pay \$50,000 cash and \$10,000 annual rental. The entire line as surveyed was to extend from Columbus to Athens, O., 70 miles. No part of the road has yet been built. In November, 1891, two days' work was done in order to hold the charter.

Columbus, Sandusky & Hocking.—The directors of the company have brought suit for \$200,000 damages against the persons instrumental in bringing about the

Receivership on the ground that the defendants wrongfully secured the appointment of a Receiver for the road when there was no necessity for the action, and that it has resulted in great damage to the company, and has had the tendency to injure its credit. The receivership lasted only one week, the property being restored to the directors Jan. 26, 1897.

Delaware & Hudson.—The preliminary report of the Delaware & Hudson Canal Co. for the year ended Dec. 31 shows:

	1896.	1895.	Inc. or Dec.
Coal receipts	\$7,778,225	\$7,369,379	I. \$408,846
R. R. receipts	10,211,633	10,129,082	I. 82,551
Miscellaneous	566,584	1,321,157	D. 754,573
Total gross	\$18,556,442	\$18,819,618	D. \$263,176
Oper. exp.	13,693,799	13,376,732	I. 317,067
Net earn.	\$4,862,643	\$5,442,886	D. \$580,243
Int., t's & r's	3,087,631	3,078,492	I. 9,139
Balance	\$1,765,012	\$2,364,394	D. \$599,382
Dividends	2,450,000	2,450,000	—
Deficit	\$681,958	\$85,606	I. \$596,352

The amount earned on the stock was 5.04 per cent., against 6½ per cent. the previous year.

Delaware, Lackawanna & Western.—The statement of this company for the year ending Dec. 31, 1896, is:

	1896.	1895.	Inc. or Dec.
Gross earn.	\$14,206,352	—	—
Working exp.	37,475,373	—	—
Net earn.	\$67,979	—	—
Interest	5,406,240	—	—
Net profit	\$1,324,739	—	—

This is 5.05 per cent. on a capital stock of \$26,200,000. The coal carried in the year was 7,484,071 tons.

Georgia Railroad & Banking Co.—The following represents the operation for the year ended June 30:

	1896.	1895.	Inc. or Dec.
Gross earn.	\$1,479,792	\$1,307,638	I. \$172,154
Oper. exp. & taxes	1,048,873	977,354	I. 71,519
Net earn.	\$431,119	\$330,274	I. \$100,845
Other income	92,750	92,752	D. 2
Total income	\$523,869	\$423,026	I. \$100,843
Rentals	600,000	600,000	—
Def. to lessees	\$74,131	\$186,974	D. \$112,843

Greenwood, Anderson & Western.—On Feb. 1 Judge Simonton, in the United States Circuit Court at Charleston, S. C., appointed C. M. Ward Receiver of this road and of the Carolina Central. The company was organized to build an extension of the latter road, which it leased in January of last year, from Seivern, S. C., north to Batesburg and Greenwood, S. C., 66 miles in all. The extension is about completed to the former town, 15 miles, 10 miles having been opened for traffic in November, 1896.

Long Island.—The President of the United States Mortgage & Trust Company authorized last Friday the statement that his company has completed the purchase of the Corbin stock in the Long Island Railroad Company for the account of a syndicate. This stock added to the stock owned by Mr. Pratt, also a member of the syndicate, is a controlling interest. Before the transaction on the part of the syndicate was closed special reports were made on the financial condition by Mr. Stephen Little and on the physical condition by Mr. H. H. Vreeland, President of the Metropolitan Traction Co. Mr. Little covered the period from June 30, 1888, to Aug. 31, 1896. He approved Mr. Baldwin's methods of readjusting the accounts, and said that all that Mr. Baldwin had permitted to remain in capital account from the expenditures of those years was for double-tracking, for permanent improvements at terminals, for additional land, for block signals and for like permanent and substantial improvements. Mr. Baldwin had revised the accounts with great care and fairness. Notwithstanding the fact that these charges to capital had been so strictly limited by Mr. Baldwin, nevertheless the railroad has, within the period, been to a considerable degree reconstructed, the charge being borne by income account. Many items which Mr. Baldwin has taken out of capital account and charged to working expenses or profit and loss would, on the theory of some railroad book-keeping, be continued in capital account, but Mr. Little approves of this disposition. He concludes that the railroad hereafter, with only the average gross earnings of the period under consideration, will be more than self-supporting. There are several things which are favorable to an intelligent development of the property. One, the readjustment of the accounts which now represent its real condition; another, the expenditure of over a million dollars for a new equipment in the past eight years; another, the substantial rebuilding of the road, and, finally, the facilities now existing for largely increasing the business without a corresponding outlay in expenditures. Addition to the gross revenue, therefore, should now add substantially to net.

Mr. Vreeland says that a revolution of the most substantial nature has been made in the property. The main lines have been almost entirely rebuilt and the subordinate lines have been improved. The sections of the lines adjacent to New York, subject to heavy traffic, are provided with the means of meeting that traffic, such as interlocking switches and signals, block signaling, gatemen, automatic signals at crossings, etc. The permanent way has been improved and second track and sidings have been constructed. He sums up the results of his investigation as follows:

The property as a whole is in good operative condition. No extraordinary expenditures are required. On the permanent way the superstructure, including bridges and trestles, motive power, rolling stock and ferry equipment, no expenditures are required other than those necessarily made from time to time upon any like property, and chargeable to maintenance in the ordinary course of business.

In view of future electrical development, the general policy should be that of wise economy, spending money upon such parts of the property as are only adapted to use by steam.

Every effort should be exerted and all speed utilized in depressing and elevating the tracks for a greater part of the distance between Jamaica and Flatbush avenue.

The construction of a tunnel from Flatbush avenue, Brooklyn, to New York, or the establishment of any similar direct connection with New York City, would increase the actual value and earning capacity of the property. In view of all these considerations the possibilities of the property are so great as to be wholly dependent upon the breadth and wisdom of the policy of the company coupled with the excellent service which I have found to be rendered by the present management.

Louisville, New Albany & Chicago.—The foreclosure sale of this road, noted in our last issue, will be held at Indianapolis, Ind., March 10. The upset price is given as \$3,000,000. W. A. Van Buren has been appointed Special Master.

Morristown & Cumberland Gap.—This road, extending from Morristown to Corrytown, Tenn., 42 miles, connecting with the Southern at the former and the Knoxville, Cumberland Gap & Louisville Road at the latter point, will be sold at public auction Feb. 20. The road was offered at foreclosure at Knoxville, Tenn., in August, 1896, but was not sold. The price put on the property by the court was \$125,000. The upset price is now given as \$105,000.

Nashville, Chattanooga & St. Louis.—J. S. Rogers, of New York City, has filed an application in the United States Circuit Court, at Nashville, Tenn., asking that the leases of the Paducah, Tennessee & Alabama and Tennessee Midland roads, made Jan. 1, 1896, be set aside, that the present Board of Directors of the parent company be dissolved and a new election held and that the present Board of Directors be held individually responsible for the losses sustained under the existing lease. Mr. Rogers is a director of the Nashville, Chattanooga & St. Louis and is said to be the largest individual stockholder of that company.

Northern Pacific.—The operations of the entire system, including the St. Paul & Northern Pacific and other lines heretofore leased, but now owned, for the month of December, 1896, were: Gross earnings, \$1,455,145; operating expenses, \$879,620; net earnings, \$575,525; taxes, \$28,507; net operating income, \$547,018; other income, not including land sales, \$45,802; total net income, \$592,820. For the four months to Dec. 31 the operations were: Gross earnings, \$7,469,552; operating expenses (including a proportionate part of the estimated taxes and rail and tie renewals for the current year of the new company, being ten months to July 1, 1897), \$3,925,272; net earnings, \$3,544,280; taxes, \$177,981; net operating income, \$3,366,299; other income, not including land sales, \$110,828; total net income, \$3,477,127.

Old Colony.—The Massachusetts Railroad Commissioners have approved the issue of \$2,000,000 of bonds, to be used for purposes of refunding outstanding bonds about to come due, and also for permanent improvements. The road has also permission to issue, in addition to the above, \$200,000 of bonds for other refunding purposes. All the bonds are to be for a term of 30 years at 4 per cent.

Oregon Short Line & Utah Northern.—Acting under instruction from Judge Sanborn of the United States Circuit Court at St. Louis the Receivers paid the semi-annual interest on \$445,000 of first mortgage bonds, due Feb. 1. The property of the company was sold under foreclosure Jan. 9 and bought in by a reorganization committee, to which the property will soon be turned over.

Philadelphia & Reading.—The Receivers of the railroad and Coal & Iron companies have filed in the United States Circuit Court at Philadelphia their account of the proceeds of receivers' assets and the disposition of the same. The statement shows an excess of obligations over the proceeds of sale of Receivers' assets amounting to \$2,255,667.60.

Pittsburgh & Lake Erie.—The results of operations for the year ended Dec. 31 were:

	1896.	1895.	Inc. or Dec.
Gross earn.	\$1,511,421	\$1,514,836	D. \$3,415
Oper. expen. and taxes	3,117,310	3,394,093	D. 276,783
Net earn.	\$1,284,081	\$1,314,760	D. \$30,679

St. Louis, Vandalia & Terre Haute.—The Governor of Indiana has signed a bill directing the company to make an accounting as to an alleged debt, under an old charter, of about \$1,000,000 to the State School Fund.

Southern.—Arrangements have been completed with the Mercantile Trust & Deposit Co., Baltimore, Md., for an extension of \$500,000 first mortgage preference 7 per cent. bonds of the Atlanta & Charlotte Air Line, due April 1 next. The bonds will be extended at 4 per cent., and mature Jan. 1, 1907. Holders of the 7 per cent. bonds will be given an opportunity to exchange their old bonds for the new ones. The Trust Company, under the agreement, is to take at par all remaining bonds of the new issue that may not be taken by holders of the present securities. The right of extension has been reserved to holders who shall deposit their bonds on or before March 15 at such depositories as shall be named by the Trust Company.

The earnings for December, and for six months ending Dec. 31 were:

	1896.	1895.	Inc. or Dec.
December:			
Gross earn.	\$1,699,790	\$1,836,571	D. \$136,781
Oper. expen.	1,116,507	1,197,968	D. 81,461
Net earn.	\$583,283	\$638,603	D. \$55,320
P. c. exp. to earn.	65.6	65.2	—
Six Months:			
Gross earn.	\$9,338,685	\$10,418,162	D. \$1,079,477
Oper. exp.	6,539,231	6,886,667	D. 347,436
Net earn.	\$3,299,354	\$3,531,495	D. \$232,141
P. c. exp. to earn.	66.4	63.1	—

South Side Elevated.—The reorganization of the Chicago & South Side Rapid Transit (the Alley road) was perfected at a meeting held in Chicago Jan. 28. The question of a loop connection with the West Side lines and the securing of a downtown terminal was not considered, but it is believed that immediate steps will be taken and that the contract entered into with the loop company by the old company will be continued in force. The cost of the improvements, together with what will have to be paid to the bondholders who declined to come into the reorganization, will use up all available cash. It is proposed to raise the funds needed to equip the road with electricity by negotiating a loan against the credit of the company, and no bonds will be issued unless such a course becomes absolutely necessary. The capital stock of the new company is \$10,383,800 and no bonds. The directors and officers are given in another column.

Tennessee Central.—In accordance with a decree rendered by Judge Fisher in the Chancery Court at Crossville, Tenn., Jan. 27, the road is to be sold at auction at Crossville within 60 days. The terms of the sale are one-half payable Oct. 22, 1897, and the balance April 22, 1898. The right, title and interest of the Tennessee Improvement Co. is also included. The decree is in the interest of the reorganization and the acquirement of the properties by a St. Louis syndicate, which promises to complete the road to a connection with the Cincinnati Southern, giving Nashville a new outlet to the east. The upper court at Nashville recently decreed the sale of

the first 10 miles of the road east of Monterey, the western terminus, to satisfy a claim of \$18,000, but the date has not yet been set. A syndicate, in which the Receiver, C. O. Godfrey, is interested, is being formed to purchase that part of the main line.

The line as originally laid out was to extend from the terminus of the Nashville & Knoxville, near Monterey, Tenn., easterly via Crossville, Rockwood, Kingston and Harriman to Knoxville, a distance of 100 miles. It was later decided to change the route, leaving out Kingston and shortening the distance by eight miles. Between Monterey and Crossville, 21 miles, the grading has been finished. In addition to this about 10 more miles have been graded and two-thirds of the heavy tunneling completed. Cumberland County, through which the road is to run, abounds in coke almost equal in quality to Connellsville or Pocahontas. The plans also included the purchase of the Nashville & Knoxville making one line from Lebanon to Knoxville. The Nashville connection will be secured through the Nashville, Chattanooga & St. Louis.

Union Pacific.—Attorney-General Harmon is carrying out the policy of the Executive department to foreclose the government's lien on the property, and has filed petitions in the United States courts in the districts through which the road operates.

On Jan. 28 Mr. Allen, Populist, from Nebraska, introduced in the Senate a bill questioning the authority of the Executive to foreclose the lien or to sell the property without additional legislation. Two days later Mr. Hubbard, of Missouri, introduced into the House a bill providing for the appointment of a commission to adjust the whole matter.

The New York *Sun* states that J. P. Morgan & Co., managers of the bankers' syndicate that underwrote the plan of reorganization, have sold to a number of foreign banking and investment interests two-thirds of the Northern Pacific stocks accruing to the syndicate through the failure of the original holders to pay the assessment thereon; for about \$3,500,000 and have given an option on the balance. The names of the purchasers are not given authoritatively, but it is believed that the Deutsche Bank, of Berlin, represented in the transaction by Edward D. Adams, Chairman of the Board of Directors of the Northern Pacific, is the principal, if not sole, purchaser. The Deutsche Bank has, since the liquidation by the Northern American Company of its holdings of the Northern Pacific stocks, represented the largest single interest in Northern Pacific. The stock controlled by the underwriting syndicate was 19,530 shares preferred and 258,390 shares common stock, also \$4,500,000 of the new prior lien 4 per cent. and \$4,184,000 of the new general lien 3 per cent. bonds. One third of the 4 per cent. bonds have also been sold.

Wabash.—Following is a statement of the operations for December and six months from July 1:

	1896.	1895.	Inc. or dec.
Gross earn.....	\$965,374	\$1,070,151	D. \$104,777
Oper. expen.....	673,694	781,071	D. 107,377
Net earn.....	\$291,680	\$289,083	I. \$2,597
Six months:			
Gross earn.....	\$6,134,057	\$6,977,592	D. \$843,535
Oper. expen.....	4,233,318	4,850,327	D. 617,009
Net earn.....	\$1,900,739	\$2,127,265	D. \$226,526

Wheeling & Lake Erie.—Charles Fairchild and Alexander McNeill, representing the holders of over \$1,000,000 par value of stock, are endeavoring to secure an investigation of the affairs of the company. Mr. T. Herrick and Robert Blickensderfer were appointed Receivers Jan. 15.

A blockade in the Wheeling yards, which lasted about one week, has been raised by the dismissal of attachments against the company on 300 freight cars, recently secured by the Huron Dock Co., of Cleveland, to satisfy a claim of \$6,700.

The Wheeling, Lake Erie & Pittsburgh Coal Co. has confessed judgments in United States Court at Columbus, O., in favor of the Receivers of the railroad for \$302,214. The coal company went into the hands of Receivers Jan. 16.

Electric Railroad News.

Boston.—The West End Street Railway Co. has advertised \$2,000,000 in bonds for sale.

Brooklyn.—Judge Dickey, of the Supreme Court, has rendered a decision restraining the Nassau Electric Railroad Company from carrying passengers from the Brooklyn Bridge to Coney Island for five cents. The fare hereafter will be twice that amount. President Johnson, of the Nassau line, states that an appeal will be made from the decision. The injunction was obtained by the Brooklyn Elevated Railroad Co., the officers of which set forth that the Nassau Co. had violated an agreement between the two roads in charging less than 10 cents. It was claimed that, as a result of the alleged breach of the agreement, the "L" road suffered a falling off in receipts of \$15,000, which amount Judge Dickey ordered the Nassau Co. to pay the "L" road.

The Brooklyn Rapid Transit Co. reports gross earnings as follows:

	1897.	1896.	1895.
Brooklyn Heights R. R. Co.....	\$339,762	\$333,643	\$168,466
Brooklyn, Queens County & Suburban R. R. Co.....	53,128	48,801	23,336
Total.....	\$392,890	\$382,444	\$191,822
Seven months ending Jan. 31:			
Brooklyn Height R. R. Co.....	\$2,692,475	\$2,539,288	\$2,583,468
Brooklyn, Queens County & Suburban R. R. Co.....	437,693	410,963	372,405
Total.....	\$3,130,168	\$2,950,251	\$2,955,873

Charleston, S. C.—The newly incorporated Charleston Electric Street Railway Co., which is owned principally by New York and Baltimore capitalists, and which has been building new electric roads in Charleston for the last two months, has bought the Charleston City Railway Co. and a controlling interest in the Enterprise Street Railroad Co. Cuyler, Morgan & Co., of New York, owned 6,000 of the 10,000 shares of the stock of this latter company, and the Charleston Railway Company has offered to each of the stockholders of the Enterprise Company 20 per cent. of the par value of stock held by the holder, payable in stock of the Charleston Railway Co. The stock of the Charleston Co. thus offered in exchange is to be a part of the total capital stock of the Charleston Co., which is not to exceed \$900,000. This offer remains open until Feb. 10. The bond issue of the Enterprise road is \$47,000, all of which is held in Charleston.

Chicago.—On Jan. 20, Dickerson McAlister was appointed Receiver of the Metropolitan West Side Elevated Railroad Co. A bill to foreclose the mortgage under

which there is an authorized issue of \$15,000,000 of bonds has been filed in the Federal Court. There has been issued so far \$10,000,000, on which the interest is \$500,000 a year, and a further issue of \$5,000,000 of bonds has been authorized. The company was incorporated in 1892 with a capital stock of \$15,000,000, and the road was built regardless of expense, nearly \$5,000,000 being paid for the right of way.

A committee has been formed for the protection of the bondholders of the Englewood & Chicago Electric Street Railway Co. which recently went into the hands of G. Herbert Condit as Receiver. It is the purpose of the committee to formulate a plan for the reorganization of the company.

New Orleans, La.—The New Orleans Traction Co. reports the following figures for the last three calendar years:

	1896.	1895.	1894.
Gross earnings.....	\$1,322,828	\$1,319,058	\$974,568
Operating expenses.....	762,065	766,612	618,635
Net earnings.....	\$560,763	\$552,446	\$355,933

New York.—Mr. William C. Whitney has purchased the larger part of the stock of the Second Avenue Railroad of New York. Although not officially stated, it is probable that the line will be controlled by the Metropolitan Traction Co. The Second Avenue Railroad Co. has a capital stock of \$3,762,000, represented by stock amounting to \$1,862,000, first mortgage bond amounting to \$1,600,000, and \$300,000 in debenture bonds, besides \$60,000 on the company's stable property. The road has been in operation since 1854. For 1895 its gross receipts were \$957,465, and it paid \$93,100 in dividends on its capital stock.

Ottawa, Ont.—The annual report of the Ottawa Electric Railway Co. shows the business during 1896 to have been the largest in the history of the company, the gross receipts being \$212,105.85, and the net profit \$67,745.61. Four quarterly dividends of 2 per cent. each were paid.

Savannah, Ga.—The property of the Electric Railway Co. of Savannah, was sold on Jan. 5 for \$211,000. The purchasers were Herman Meyer, of Savannah, and J. H. Fall, of Nashville, representing a syndicate of the majority of bondholders. The bonded indebtedness of the company is \$600,000. The property will be reorganized at once, and a large amount of money spent for new equipment.

Toronto, Ont.—Below is given a summary of the report of the Toronto Railway Co. for the past three calendar years:

	1896.	1895.	1894.
Gross earnings.....	\$997,273	\$992,800	\$958,370
Oper. expenses.....	507,780	489,514	317,707
Net earnings.....	489,512	502,886	440,663
Percentage of oper. exp.....	50.69	49.3	51.0
Net profits.....	282,026	301,310	250,695

After paying \$210,000 in dividends to shareholders, and \$60,000 to the city for mileage, there is a balance to the credit of income account of \$12,026.47.

TRAFFIC.

Traffic Notes.

The managers of the Joint Traffic Association have authorized the Baltimore & Ohio to reduce the first class fare between New York and Cincinnati from \$17 to \$16. This makes the Baltimore & Ohio rate the same as that of the Erie and one dollar less than that of the Chesapeake & Ohio. The standard rate (over the Pennsylvania and the Cleveland, Cincinnati, Chicago & St. Louis) is \$18.

Conferences have recently been held between the Southern Pacific and the Oregon Railway & Navigation Co., looking to the settlement of the differences which for a year or more have kept passenger rates below the normal level, by the lines of both these companies between San Francisco and Portland, but no result was reached. It is said that the Southern Pacific demands 75 per cent. of the passenger business and the boat line 50 per cent.

The Managers of the Joint Traffic Association have approved several excursions to Atlantic City and to Niagara Falls, which are to be run in July, August and September next. The announcement of traffic arrangements a long time in advance seems to be a growing fashion, the New York Central having recently announced a through sleeping car between Boston and Saranac Lake which does not begin running until next July. This car is to run twice a week during the summer.

The Texas Supreme Court has decided, in the matter of the Houston & Texas Central vs. Railroad Commissioners, that the Commissioners have power to make rates for cotton compresses. The Court ruled that the Commission certainly had the right to make the rates, inasmuch as the legislature, by the enactment of laws, has provided that the Commission shall prescribe rates for freight and passenger travel and "to correct all abuses;" this gives them a right to correct the compress rates, which come under the head of abuses.

President Robert Ramsay, of the Baltimore Chamber of Commerce, in his annual report, presented to the Chamber last week, says that although that city has, in the last calendar year, handled over 66 million bushels of grain and flour (flour reduced to wheat) as against less than 38 millions in 1895, the merchants of the city still have a pressing duty to see that the facilities for carrying on the grain trade are kept equal to the demands. The elevator capacity of the city is insufficient, and Mr. Ramsay believes that a third more grain could have been sold by Baltimore dealers if they had had the necessary storage facilities. The combined capacity of the tide-water elevators in Baltimore is estimated at 4,800,000 bushels, but it is believed that the room actually available is only 70 per cent. of this.

The Chicago Great Western's Illegal Grain Euying.

The Interstate Commerce Commission, in an opinion by Commissioner Prouty, has announced a decision in the matter of alleged unlawful rates and practices in the transportation of grain and grain products by the Atchison, Topeka & Santa Fe, the Chicago Great Western and others, concerning a transportation practice of the Chicago Great Western. This company, owning the entire stock of the Iowa Development Company, which had been organized for the purpose of holding the title to certain lands of the railroad company, caused grain to be purchased in Kansas City in the name of the Development Company, transported over the lines of the railroad company to Chicago, and there sold upon the market. The Development Company had no bona fide interest in the transaction. Neither the railroad nor the Development Company purchased the grain for the pur-

poses of ownership, the whole transaction being simply a device to secure its transportation at other than the published rates, and the only rate paid was the profit upon the transaction, which varied with each shipment.

The Commission holds that this constituted a violation of the second, third and sixth sections of the act to regulate commerce, and an order directing the railroad company to cease and desist from such violation has been issued.

Arbitrator's Decision on New York-Chicago Fares.

J. F. Goddard, Garret A. Hobart and E. F. Leonard, composing the Board of Arbitration of the Joint Traffic Association, have rendered a decision in the matter of the Erie's appeal on the question of fare between New York and Chicago.

The arbitrators were asked to establish a principle or rule to govern the making of rates of fare by all trains exceeding a normal speed, by all routes, and applicable to every class or character of service. They say that the principle governing the use of differential fares is the same in the case of excess fares which may be imposed upon service of superior excellence in time or equipment, as it is in case of deductions which are allowed to be made in compensation for inferior service, in whatever respect such inferiority may be found to exist, the end in view being always to procure to each company in the association its equitable proportion of the competitive traffic, while requiring from the public equitable compensation for the service performed. The report continues: "In the discussion of this subject at the hearing there was a unanimous expression by all the parties interested that the general principle of the award of May 26, 1893, made by Messrs. Cassatt and Bliss, is correct, and should govern the fares for trains between New York and Chicago, while there was some difference of opinion on the question of the time which should be assumed to be the limit of speed for normal rates of fare and its application to different classes of service. Messrs. Cassatt and Bliss fixed that limit at 28 hours between New York and Chicago, and the arbitrators are now of the opinion that the limit should not be changed, but should remain at 28 hours.

"In view of the varied character of the service by the different routes and of the different trains over the same route, the arbitrators are of the opinion that it is impracticable to fix a specific schedule of differences in fare for all classes of trains based solely on speed alone, but that the character of service and the differential fares now in effect between the points at issue by all routes should at the same time be considered; otherwise the principle on which existing differential fares were created must be ignored. The arbitrators would not be justified in making an award which may at once affect all rates of fare as well as the speed and general character of service without a proper appeal and the fullest argument, and it should only be done on an appeal from a decision of the managers, which will permit arguments covering the entire nature of the passenger service between New York and Chicago. It seems, therefore, that any decision limited to the present contention may not only result inequitably, but would certainly be inconclusive.

"To enable parties, if they so desire, to raise the whole question in a manner which will broaden the scope of investigation, as above indicated, and without passing upon the merits as presented further than has been decided above, the award of the arbitrators is that the appeal does not, for the reasons given, warrant further decision at their hands."

Chicago Traffic Matters.

CHICAGO, Feb. 3, 1897.

The sensation in Chicago railroad circles during the past week was the fact, made public on Sunday by one of the papers, that the Board of Managers of the Joint Traffic Association had fined the Big Four, the Toledo, Peoria & Western, the Terre Haute & Indianapolis, the Grand Trunk and the Nickel Plate roads for violating the board's circular regarding the transfer of grain. The matter created a tremendous sensation on the Board of Trade. The fines assessed are \$20 against each road, and they are the first penalties inflicted by the managers since the creation of the Joint Traffic Association. The offenses, committed last summer, were violations of Revised Circular No. 165, which reduced the transfer charges on oats from \$2.50 to \$1.50 per car; the roads were caught in attempts to manipulate these charges by clipping oats free of charge.

The Board of Administration of the Western Freight Association has adopted new rules to govern transit and reconignment privileges on grain at points on the Missouri River. Grain and grain products milled in transit or stopped off for any purpose are to be subject to supervision by a joint agency to be conducted by the Western Freight, the Trans-Missouri and the Southwestern Traffic associations.

The Chicago Freight Bureau held its annual election on Wednesday. Elliott Durand was elected President and N. G. Iglehart, the Commissioner of the Association for the past 10 years, was reappointed.

One of the first two-cent passenger bills to be discussed is that in Missouri, and a hearing before the House Committee on Railroads before the Legislature of that State last week has created much interest in Chicago. Several of the prominent Western General Passenger Agents appeared before this committee and argued against the measure, among them P. S. Eustis, of the Chicago, Burlington & Quincy, whose argument is being extensively published.

Eastbound shipments from Chicago and Chicago Junction points to and beyond the Western terminus of the trunk lines for the week ending Jan. 28 amounted to 88,927 tons, as compared with 96,617 tons the preceding week. The statement includes shipments of 41,532 tons of grain, 11,035 tons of flour and 10,136 tons of provisions, but not live stock. The following is the statement in detail for the two weeks:

Roads.	WEEK TO JAN. 28.		WEEK TO JAN. 21.	
	Tons.	p. c.	Tons.	p. c.
Baltimore & Ohio.....	6,226	5.9	7,307	7.6
C. O. & St. Louis.....	9,382	10.5	5,787	6.0
Erie.....	4,885	5.5	5,418	5.6
Grand Trunk.....	8,954	10.1	8,945	9.3
L. S. & M. S.....	13,862	15.6	15,322	15.9
Michigan Central.....	9,522	10.7	13,977	14.5
N. Y., Chi. & St. L.....	7,248	8.1	10,483	10.8
Pitts., Cin., Chi. & St. Louis.....	7,334	8.2	10,675	11.0
Pitts., Ft. Wayne & Chicago.....	17,931	20.2	11,118	11.6
Wabash.....	4,583	5.2	4,545	4.7
Totals.....	88,927	100.0	96,617	100.0

* See article elsewhere in this paper.—EDITOR.